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Disability Services (Voice/TDD): (203) 932-7332
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Health Services Fax: (203) 931-6090

Website: *www.newhaven.edu*

This catalog supersedes all previous bulletins, catalogs, and brochures published by the University of New Haven and describes academic programs to be offered beginning in fall 2006. Undergraduate students admitted to the university for fall 2006 and thereafter are bound by the regulations published in this catalog. Those admitted prior to fall 2006 are bound by those new regulations which have been duly instituted and announced prior to the semester during which they are effective.

The University of New Haven is committed to affirmative action and to a policy which provides for equal opportunity in employment, advancement, admission, educational opportunity, and administration of financial aid to all persons on the basis of individual merit. This policy is administered without regard to race, color, national or ethnic origin, age, gender, religion, sexual orientation, or disabilities not related to performance. It is the policy of the University of New Haven not to discriminate on the basis of gender in admission, educational programs, activities, or employment policies as required by Title IX of the 1972 Educational Amendments. This school is authorized under federal law to enroll non-immigrant alien students.

Inquiries regarding nondiscrimination, affirmative action, equal opportunity, and Title IX may be directed to the university's equal opportunity/affirmative action officer at 300 Boston Post Road, West Haven, CT 06516; phone (203)932-7265. Persons who have special needs requiring accommodation should notify the Director of Disability Services and Resources at 300 Boston Post Road, West Haven, CT 06516 or by Voice/TDD at (203)932-7332.

Every effort has been made to ensure that the information contained in this publication is accurate and current as of the date of publication; however, the university cannot be held responsible for typographical errors or omissions that may have occurred.

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The university reserves the right to make, at any time, whatever changes it deems necessary in admission requirements, fees, charges, tuition, faculty, instructors, policies, regulations, and academic programs prior to the start of any class, term, semester, trimester, or session. The university reserves the right to divide, cancel, or reschedule classes or programs if enrollment or other factors so require. All such changes are effective at such times as the proper authorities determine and may apply not only to prospective students but also to those who are already enrolled in the university.

Dear Student:

At the University of New Haven, we provide world-class career preparation in all of our programs, but our overarching goal is to prepare students to lead meaningful lives. Through our courses in the arts, humanities, and sciences, we cultivate our students' humanity; and, by integrating real-life learning in our academic programs — through such areas of emphasis as community service, internships, student-faculty research, and student self-governance — we prepare our students for leadership in their careers and as members of a democratic society.

The technological and economic complexity as well as the great cultural diversity of the world in which you will live and work will require you to be exceptionally flexible, compassionate, and tolerant human beings. I hope your UNH education will lead you to measure your personal success not just by the dollars you earn but primarily by the positive impact you can have on the lives of others. For this reason, I encourage you — regardless of your major — to explore this catalog for courses that will enrich your sense of social justice and societal responsibility.

The faculty at UNH has impressive academic and professional credentials, in many cases bringing with them national and even international reputations in their fields. More important to you as a student, they are committed in unrivaled ways to the success of each and every one of their students. I hope you will take advantage of their interest in you and get to know as many faculty members as possible and allow them the privilege of knowing you.

One of my favorite quotations, and one that I use often in speaking to students, is from Ernest Boyer, a former president of the Carnegie Foundation, who once warned that the "crisis of our time relates not to technical competence, but to a loss of the social and historical perspective, to the disastrous divorce of competence from conscience." As you focus in your studies on your technical training in whatever field you choose to study, I hope you will also allow yourself some time to take courses and participate in extracurricular activities that challenge you to question your own values as well as prevailing societal values and to look for ways to improve the world that you will help form as a member of a global society.

I wish you success in your studies and personal enrichment through your experiences at the University of New Haven. Please come to see me if there is ever anything I can do to assist you.

With best wishes,

Steven H. Kaplan
President

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THE UNIVERSITY

UNIVERSITY OF NEW HAVEN

We make tomorrow.

At the University of New Haven, we are wholly dedicated to the professional future of our students and caringly committed to their achievement.

We provide the people, the programs, and the places that enable our students to prepare for personal success — in their careers and in life.

The University of New Haven is a private, independent, comprehensive university based in southern New England, specializing in quality educational opportunities and preparation of both traditional and returning students for successful careers and self-reliant, productive service in a global society.

Our Mission

To develop career-ready and cultivated graduates, well prepared for meaningful roles and the pursuit of lifelong learning in a global economy and society.

Our Vision

To be the institution of choice for students who seek the highest quality education for professionally oriented careers. We will be noted for our ability to combine professional education with liberal arts and sciences and with the development of high ethical and cultural standards among our graduates.

Our Guiding Principles

UNH is committed to educational innovation, to continuous improvement in career-focused and professional education, and to support for scholarship and professional development.

UNH takes pride in, and models itself by, the standard of best practices in its commitment to service, quality, integrity, and personal caring. All academic programs, as well as campus and student life, provide rich opportunities for leadership, personal growth, and participation in the aesthetics of life so that the University of New Haven will personify a successful commitment to diversity, equality, and "the pursuit of happiness."

Our goal is to distinguish ourselves by the measures of student admissions; retention; career development; collaboration with business, industry, and community; and the success of our graduates and their support as alumni.

Our Values

- Belief in and practice of UNH's Mission and Vision
- Commitment to the success of our students through caring and responsive service
- Teamwork: helping each other to succeed
- Communication: trusting, open, honest, and straightforward
- Commitment to thoughtful action
- Thinking, articulating, doing, and evaluating
- Leading by example with continuous improvement
- Facing all issues and being accountable
- Respect for the individual, including his or her thoughtful input
- Recognizing success

How We Will Be Known

- Excellence in career professions
- Currency in information technology and knowledge management
- Exceptional faculty, talented students, and accomplished alumni
- Mentored and engaged real-life learning
- Cultural awareness in a global society

- Community, business, and professional partnerships
- Ideal size and presence
- Student satisfaction

The hallmarks of a UNH education are quality educational opportunities at all post-secondary levels, through career-oriented academic programs with a strong liberal arts foundation, taught by a caring and highly qualified faculty in safe, convenient, and diverse campus environments.

A solid core curriculum of liberal, humanistic coursework is balanced with professional programs in business, engineering, applied computer sciences, public safety, and other advanced technical areas.

Moreover, the university is flexible enough to meet the needs of students who work while they attend UNH. A range of programs for part-time study is offered at night. A cooperative education program makes it possible for students to augment their academic program with related work experience.

The Graduate School offers students the opportunity to continue study beyond the bachelor's degree on a part-time or full-time basis.

By responding to the educational needs of its students, the University of New Haven has become a major regional university serving both our students and the business community.

Accreditation

The University of New Haven is a comprehensive, nonsectarian, independent institution of higher learning chartered by the General Assembly of the State of Connecticut.

The University of New Haven is accredited by the New England Association of Schools and Colleges (NEASC), Inc., a nongovernmental, nationally recognized organization whose affiliations range from elementary schools to collegiate institutions offering postgraduate instruction.

Accreditation by NEASC indicates that an institution meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer group review process. An accredited school or college is one which has available the necessary resources to achieve its stated mission through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

Accreditation by NEASC is not partial but applies to the institution as a whole. It is not a guarantee of the quality of every course or program offered or of the competence of individual graduates. Rather, it provides reasonable assurance of the quality of opportunities available to students.

The UNH School of Business is actively seeking accreditation by the Association to Advance Collegiate Schools of Business (AACSB). The School has voluntarily committed to participate in a systematic program of quality enhancement and continuous improvement that makes AACSB accreditation a more realistic and operational objective.

The University of New Haven's curricula leading to the bachelor's degrees in chemical, civil, electrical, industrial, and mechanical engineering are fully accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET). The computer science bachelor's degree program is fully accredited by the Computing Accreditation Commission of ABET (CAC/ABET).

Individual programs, departments, and schools hold various forms of national professional accreditation which are listed in relevant sections of the catalog.

History

The University of New Haven was founded in 1920 as the New Haven YMCA Junior College, a division of Northeastern University. It became New Haven College in 1926 by an act of the Connecticut General Assembly. For nearly forty years, the college held classes in space rented from Yale University.

In September 1958, the college completed construction of a classroom building on Cold Spring Street, New Haven, for its daytime engineering programs. That same year, the college received authorization from the Connecticut legislature to offer the bachelor of science degree in the fields of business, accounting, management, and industrial engineering.

Although the student body on the new Cold Spring Street campus numbered fewer than 200, the college's facilities were fast becoming overcrowded. To meet the needs of the college and the local community, the Board of Governors purchased, in 1960, three buildings and twenty-five acres of land in West Haven formerly belonging to the New Haven County Orphanage.

The combination of increased classroom space and four-year degree programs sparked a period of tremendous growth in enrollment and facilities. In 1961, the year after the college moved to West Haven, the graduating class numbered seventy-five. Forty-five years later the figure has climbed to 1,200 graduates annually.

New Haven College received full accreditation for its baccalaureate programs from the New England Association of Schools and Colleges in 1966. In 1969, the college took a major step forward with the addition of the Graduate School. Initially offering programs in business administration and industrial engineering, the Graduate School expanded rapidly. Today, twenty-eight master's programs, along with a wide variety of graduate certificates, offer the approximately 1,800 graduate students many choices for post-baccalaureate study.

In 1970, on the fiftieth anniversary of its founding, New Haven College became the University of New Haven, reflecting the increased scope and the diversity of academic programs offered. Today, the university offers a rich variety of undergraduate and graduate degree programs in five schools: the College of Arts and Sciences, the School of Business, the Tagliatela School of Engineering, the Henry Lee College of Public Safety, and the Graduate School.

Undergraduate and graduate courses and programs are offered on the main campus in West Haven and at other off-campus and in-plant sites. Graduate courses in selected fields are offered at our Southeastern campus in New London and in Waterbury, Shelton, Stamford, and Newington. The graduate forensic science and fire science programs are also offered at satellite locations in California. The graduate program in national security and public safety is also offered at satellite locations in California, New Mexico, and Virginia.

Philosophy

The University of New Haven, a private, comprehensive, multi-campus university based in southern New England, provides quality educational opportunities and preparation for self-reliant, productive, ethical service in a global society.

Since its founding in 1920, the University of New Haven has been an innovator in providing quality educational opportunities with special emphasis on programs addressing current and emerging social needs.

Building on its successful past, the university will strive to achieve prominent and distinctive leadership as an institution that empowers students with substantive knowledge, the ability to communicate, problem solving skills, and the practical experience appropriate for success as leaders in their professions and as citizens of the local and world communities.

The university is committed to participatory governance and quality management through continuous improvement as the means to achieve its goals and perform its primary service—successful student and faculty growth and learning.

Schools of the University

The College of Arts and Sciences

The College of Arts and Sciences offers associate's and bachelor's degrees in numerous fields, from traditional to career-focused, all of which prepare graduates for life in a global environment.

Through the Graduate School, the College of Arts and Sciences also offers master's degree programs and graduate certificates. Detailed information on the graduate programs is available in the Graduate School catalog.

The School of Business

The School of Business offers programs in the fields of business administration, accounting, communication, marketing and electronic commerce, business economics, finance, international business, management of sports industries, hotel and restaurant management, and tourism and hospitality administration.

Through the Graduate School, the School of Business offers the MBA and other master's degree programs as well as a number of business-related graduate certificates.

The Tagliatela School of Engineering

The Tagliatela School of Engineering offers ten degree programs in nine fields: chemistry, chemical engineering, civil engineering, computer engineering, computer science, electrical engineering, general engineering, information technology/network administration and security, information technology/web and database development, and mechanical engineering.

Master of science degree programs and graduate certificates in several engineering and applied science fields are offered through the Graduate School. Students should consult the Graduate School catalog for details.

The Henry Lee College of Public Safety

The Henry Lee College of Public Safety provides programs for students who wish to major in degree programs specifically oriented toward careers in criminal justice, forensic science, forensic psychology, fire science, arson investigation, fire protection engineering, forensic computer investigation, legal studies, and occupational safety and health and related programs. The college provides a broad professional education which often incorporates classroom learning with laboratory and field experience. The college attracts students of varied ages and levels of experience, from recent high school graduates to seasoned industry professionals. It also serves professionals seeking programs designed to meet requirements of national and/or regional accreditations and licensures.

Graduate degree programs are available in national security and public safety, criminal justice, forensic science, fire science, and occupational safety and health management, as are numerous certificate programs. Several of our graduate programs are offered in California, New Mexico, and Virginia, as well as at our main campus.

UNH Southeastern

The University of New Haven has been serving the needs of business people and residents in Southeastern Connecticut and Rhode Island for more than three decades. The branch is located at Mitchell College in New London and offers graduate programs geared to the needs and interests of working professionals looking to advance their knowledge by pursuing a graduate degree. Programs in engineering, business, computer science, and education are available on an evening or weekend basis. For further information, please contact the branch at 469 Pequot Avenue, New London, Connecticut, 06320, or phone (860) 701-5454, or visit the website at www.newhaven.edu/sect.

The Graduate School

The Graduate School, founded in 1969, offers twenty-eight master's programs and a variety of graduate certificates. The main campus in West Haven offers all of our graduate programs. Courses leading to the master's degree in business administration, education, forensic science, national security, and other selected subjects are also offered at off-campus locations in Connecticut (New London, Newington, Shelton, Stamford, and Waterbury), California, New Mexico, and Virginia, depending on the program.

Programs offered by the Graduate School are:

Business Administration (MBA)
Business Administration/Industrial Engineering (dual degree)
Business Administration/Public Administration (dual degree)
Cellular and Molecular Biology
Community Psychology
Computer Science
Criminal Justice
Education
Electrical Engineering
Environmental Engineering
Environmental Science
Executive MBA (EMBA)
Executive Engineering Management (EMSEM)

Fire Science
Forensic Science
Health Care Administration
Human Nutrition
Industrial Engineering
Industrial Hygiene
Industrial/Organizational Psychology
Labor Relations
Management of Sports Industries
Mechanical Engineering
National Security and Public Safety
Occupational Safety and Health Management
Operations Research
Public Administration (MPA)
Taxation

Graduate certificates are also offered through the Graduate School.

The Graduate School operates on a trimester calendar, with terms beginning in September, January, and April. Classes generally meet once each week during the regular trimesters. In addition, an abbreviated summer session is offered during July and August. Classes meet twice each week during this special summer session.

To accommodate working professionals, most courses meet in the evenings, beginning at 5:30 or 6 p.m. A few classes are scheduled earlier in the day or on weekends. Students may enroll either full- or part-time.

Additional information regarding graduate programs may be obtained from the Graduate School Admissions Office, by emailing gradinfo@newhaven.edu, or by calling (203) 932-7133, or 1-800-DIAL-UNH, ext. 7133.

Degrees Offered by the University

The University of New Haven offers undergraduate programs leading to the bachelor of arts degree, the bachelor of science degree, and the associate in science degree. A number of undergraduate certificates are also available.

Bachelor's Degrees

The bachelor's degree programs at the University of New Haven require 120 or more credit hours of study and generally take a minimum of four years for full-time students. Part-time students take advantage of courses offered in the evening and complete their undergraduate degrees on a schedule that complements their careers. Accelerated programs for working adults are offered in various disciplines.

Associate's Degrees

Associate's degree programs are designed to encourage students to begin their college education even though they do not yet want to commit themselves to a full, four-year course of study. A minimum of sixty credit hours is required for the associate's degree, and the credits earned usually apply toward relevant bachelor's degree programs.

Certificates

Students can take their first step toward an undergraduate degree by registering for one of the certificates offered by the university.

Each certificate is carefully designed as a concentrated introduction to a particular subject area and consists of courses totaling twelve or more credit hours.

Later, students may choose to apply the credits they have earned toward a relevant undergraduate degree at the university.

Please contact the director of part-time admissions or the appropriate academic department for further details.

Graduate Degrees

Through the UNH Graduate School, programs are offered leading to the master of arts degree, the master of science degree, the master of public administration, the master of business administration, the executive master of business administration, the executive master of science in engineering management, and a number of graduate certificates. For more information, contact the Graduate School Admissions Office, or consult the Graduate School catalog.

University Policies

Diversity Policy

The University of New Haven is committed to achieving a diverse and pluralistic community which reflects the multiracial and culturally diverse society of contemporary America.

The Diversity Committee has been established to guide the university in implementing this diversity policy. The university will work toward attracting and retaining a diverse faculty, staff, and student body for the purpose of creating a pluralistic scholarly community. The committee will assist the administration in the development and implementation of programs and policies that support an enriched educational experience for a diverse university community.

The University of New Haven does not discriminate in admissions, educational programs, or employment against any individual on the basis of that individual's gender, race, color, religion, age, disability, sexual orientation, or national or ethnic origin.

Notification of the Family Educational Rights and Privacy Act (FERPA)

The Family Education Rights and Privacy Act affords students certain rights with respect to their education records, as follows:

(1) **The right to inspect and review records within 45 days of the day the university receives a request for access.** Students should submit to the registrar, dean, head of academic department, or other appropriate official written requests that identify the record(s) they wish to inspect. The university official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the university official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.

(2) **The right to request amendment of records that the student believes are inaccurate or misleading.** Students may ask the university to amend a record that they believe is inaccurate or misleading. They should write the university official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the university decides not to amend the record as requested by the student, the university will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding hearing procedures will be provided to the student when notified of the right to a hearing.

(3) **The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent.** One exception which permits disclosure without consent is a disclosure to school officials with legitimate educational interests. A school official is a person employed by the university in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the university has contracted (such as an attorney, auditor, or collection agent); a person serving on the Board of Governors; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility.

(4) **The right to file a complaint with the U.S. Department of Education concerning alleged failures by the University of New Haven to comply with the requirements of FERPA.** The name and address of the office that administers FERPA are Family Policy Compliance Office, U.S. Department of Education, 600 Independence Avenue SW, Washington, DC 20202-4605.

The Student Right-to-Know and Campus Security Act

In accordance with Connecticut's Public Act 90-259 concerning campus safety and the 1990 federal law, PL101-542: The Student Right-to-Know and Campus Security Act, all colleges and universities receiving state and federal financial assistance are required to maintain specific information related to campus crime statistics and security measures, annually provide such information to all current students and employees, and make the data available to all prospective students and their families and to prospective employees upon request.

Safety on the university campus is a natural source of concern for parents, students, and university employees. Education – the business of the University of New Haven – can take place only in an environment in which each student and employee feels safe and secure. UNH recognizes this and employs a number of security measures including its own sworn police department to protect the members of this community.

The Student Right-to-Know and Campus Security Act (Clery Act) is a federal law that requires all colleges and universities to disclose annually information about crime on and around their campuses. The Campus Crime Report includes statistics for the three most recently completed calendar years.

The full report for the University of New Haven, prepared by the UNH Police Department, is available on the UNH website and in printed form at the UNH Police Department. This report also includes information on university policies concerning sexual assaults, alcohol, drugs, weapons, and residence hall security.

Drug-Free and Smoke-Free Environment

In accordance with federal law concerning a drug-free campus environment, the relevant university policy and regulations are provided to all current students and employees. The information is also available upon request at the human resource department.

The No Smoking policy is in effect in any campus administrative, academic, or recreational building. This restriction applies to all UNH offices, classrooms, hallways, stairwells, restrooms, dining facilities, conference/meeting facilities, athletic facilities, and any other public spaces within these buildings. Smoking is confined to outdoor space, with ashtrays provided at entrances to each building.

Smoking in the residence halls is restricted to rooms, suites, and apartments which have been designated as allowing smoking as agreed upon by the roommates. Smoking is not allowed in lobbies, hallways, laundry rooms, meeting rooms, community rooms, or any other public spaces within the residence halls.

UNIVERSITY CURRICULA

University Core Curriculum

The University of New Haven's revised Core Curriculum strives to develop six basic competencies among all UNH undergraduate students so that they may better understand and get along with other people, succeed in their chosen careers, and pursue lifelong learning after completing the requirements for the bachelor's degree. The revised core aims at graduating students who are:

- Good thinkers, speakers, and writers,
- Skilled at analysis and problem solving,
- Skilled at using computer technology, and who are
- Effective citizens of their own country and the world,
- Aware of cultural similarities and differences, and
- Sensitive to artistic accomplishments.

In consultation with a faculty advisor, the student will select at least 40 credit hours of core courses from among the following six categories. Individual interests are to be encouraged as are also a breadth and depth of knowledge through traditional and contemporary areas of study.

Note well:

1. The advisor and student are cautioned to regard the prerequisites for some courses and plan core choices accordingly.
2. A student may not use a single core course to satisfy more than one category of the core.
3. An academic worksheet may prescribe or proscribe certain choices within core categories but, in general, must allow the advisor and student the widest choice possible. Program worksheets may not limit core course choices without the approval of the Core Curriculum Committee.
4. Courses with prerequisites are followed by an asterisk.

Bachelor's Degree Core Requirements

Competency 1 - **Communication** (9 credits) - Ability to develop ideas from critical reading and general observation and to express ideas effectively through writing and speaking.

CC 1.1 *Required*:

E	105	Composition
E	110	Composition and Literature*

CC 1.2 *Select one of the following*:

CO	100	Human Communication
CO	205	Intercultural Communication*
E	220	Writing for Business and Industry*
E	225	Technical Writing and Presentation*
E	230	Public Speaking*

Modern Language
Any Literature (E) course*

Competency 2 - **Analysis and Problem Solving** (10-11 credits) - Ability to dissect and explain concepts, data, actions, and events in order to understand their meaning, value, and relationship to the whole.

CC 2.1 *Select one of the following*:

BI	121	General & Human Biology with Lab I
BI	122	General & Human Biology with Lab II*
BI	125	Contemporary Issues in Biology
BI	253	Biology for Science Majors with Lab I
BI	254	Biology for Science Majors with Lab II*
CH	103/104	Introduction to General Chemistry and Lab I
CH	105	Introduction to General & Organic Chemistry with Lab
CH	115/117	General Chemistry & Lab I*
CH	116/118	General Chemistry & Lab II*
EAS	120	Chemistry w/ Applications to Biosystems*

EN	101/102	Introduction to Environmental Science & Lab
PH	100	Introduction to Physics with Lab*
PH	103	General Physics with Lab I*
PH	104	General Physics with Lab II*
PH	150	Mechanics, Heat & Waves with Lab*
PH	205	Electromagnetism and Optics w/ Lab*

CC 2.2 *Select one of the following*:

M	109	Intermediate Algebra*
M	127	Finite Mathematics*

Any more advanced mathematics or quantitative analysis course*

CC 2.3 *Select one of the following*:

CJ	250	Scientific Methods in Criminal Justice*
EC	134	Principles of Economics II
EAS	107	Introduction to Engineering*
HS	108	History of Science
HU	300	Nature of Science*
PL	210	Logic
PL	240	Philosophy of Science & Technology

Competency 3 - **Using Technology** (3 credits minimum) - Ability to apply computer skills to academic endeavors.

Select one of the following options:

Option A - *one of the following courses*:

CS	107	Computers and their Applications
CS	110	Introduction to C Programming*
EAS	112	Methods of Engineering Analysis*
EN	540	Introduction to Geographical Information Systems
M	203	Calculus III*
M	204	Differential Equations*
M	311	Linear Algebra*
MM	301	Introduction to Multimedia*
QA	380	Operations Management*

Option B - *one of the following two-course sequences*:

— I —

M	228	Elementary Statistics
P	301	Statistics for Behavioral Sciences
CJ	251	Quantitative Applications in Criminal Justice*
SO	350	Survey Research*

—II—

P	301	Statistics for Behavioral Sciences
M	228	Elementary Statistics*
P	305	Experimental Methods in Psychology*

Competency 4 - **A Sense of History and Effective Citizenship** (3-6 credits) - Ability to understand local, national, and international issues affecting one's own nation and the world and to draw lessons from the experience of the past.

CC 4.1 *Select one of the following*:

HS	101	Foundations of the Western World
HS	102	The Western World in Modern Times

CC 4.2 *Select one of the following, or, as directed by your program worksheet, take an additional course from Competency 2*:

HS	110	American History since 1607
HS	120	History of Blacks in the United States
HS	312	United States in the Twentieth Century
PS	121	American Government and Politics
PS	122	State and Local Government and Politics
PS	332	Constitutional Law*

Competency 5 - **Social Interaction and Global Perspective** (6-9 credits) - Ability to understand, appreciate, and work well with others.

CC 5.1 *Select one of the following*:

CS	416	Social and Professional Issues in Computing*
EC	133	Principles of Economics I

P	111	Introduction to Psychology
PL	215	Nature of the Self
PL	222	Ethics
PL	333	Professional Ethics*
PS	101	Introduction to Politics
SO	113	Sociology
SO	114	Contemporary Social Problems*
SO	221	Cultural Anthropology
SO	390	Organizations*

CC 5.2 *Select one of the following*:

Modern Language (3-6 credits)

HR	307	Cultural Understanding of Food and Cuisine
CJ	340	Comparative Criminal Justice
E	201	World Literature I*
E	202	World Literature II*
E	217	African-American Literature I*
E	218	African-American Literature II*
E	406-409	International Literature*
EC	200	Global Economy*
HS	207	World History since 1945
HS	260	Modern Asia
HS	262	Modern Chinese History
HS	264	Modern Japanese History
HS	270	Europe from Renaissance through Enlightenment
HS	306	Modern Technology and Western Culture
HS	345	Europe in the Nineteenth Century
HS	351	Russia and the Soviet Union
HS	353	Modern Britain
HS	355	Modern Germany
HS	381-389	Selected Studies in History
HS	446	Europe in the Twentieth Century
MU	112	Introduction to World Music
PS	222	United States Foreign Policy
PS	241	International Relations
PS	281-285	Comparative Governments
TA	166	Touristic Geography I - The Western Hemisphere
TA	167	Touristic Geography II - The Eastern Hemisphere

CC 5.3 *Select a second course from 5.1 or 5.2, or, as directed by your program worksheet, an additional course from Competency 2.*

Competency 6 - **Aesthetic Responsiveness** (3 credits) - Ability to understand and appreciate artistic achievements.

CC 6 *Select one of the following*:

AT	101	Introduction to Studio Art I
AT	231	History of Art I
AT	232	History of Art II
AT	331	Contemporary Art

Any Literature (E) course*

MU	111	Introduction to Music
MU	112	Introduction to World Music
MU	125	Elementary Music Theory
MU	211	History of Rock
T	131	Introduction to Theatre
T	132	Theatrical Style
T	241	Early World Drama and Theatre
T	242	Modern World Drama and Theatre

Associate's Degree Core Requirements

Students pursuing an associate's degree must satisfy the following core curriculum competencies:

Communication (CC1) - 6 credits

Analysis and Problem Solving (CC2) - 3 credits

Using Technology (CC 3) - 3 credits

Social Interaction and Global Perspective (CC 5) - 3 credits

A Sense of History and Effective Citizenship (CC 4) - 3 credits

Aesthetic Responsiveness (CC 6) - 3 credits

These competencies are explained in detail above. All core requirements satisfied by the student for the associate's degree will be applied toward the larger bachelor's degree core if the student continues study.

Academic Advising

To assist students in their academic development, the university assigns an academic advisor from the department of each student's chosen field of study. As soon and as often as possible, wise students seek the advice of their academic advisors regarding major requirements, career opportunities, choice of a minor, and progress in their major, as well as other areas of personal interest. At the time of registration, the academic advisors assist in and approve course selection.

Students also confer with their advisors when adding or dropping courses, and advisors often make referrals to other qualified personnel on campus. The academic advisor is, therefore, the link between the student and the academic regulations of the university.

The Honors Program

The UNH Honors Program is designed for exceptionally motivated students who have shown high levels of academic achievement. In order to enter the program, a student must have completed at least twenty-four credit hours with a cumulative grade point average of at least 3.3 at the time the first honors course is undertaken.

Applicants for the program are evaluated on the basis of high school performance, college performance, standardized test (SAT, ACT) scores, and recommendations of college teachers.

The university requires every student, regardless of major, to take a number of core courses in nine general areas. The Honors Program offers students an intellectually exciting and challenging way to satisfy some of these core requirements.

Students in the program take one honors seminar each semester for four semesters. Each seminar actively involves students in problem solving and inquiry. Topics in the seminars draw from several disciplines and study linkages between disciplines. Each course satisfies one of the university core curriculum requirements.

Honors Seminars offered recently have included:

"Engineering and Society." Relationships between engineering and society are investigated by focusing on environmental concerns.

"Contexts and Images: African-Americans in Literature and Film." This course provides an opportunity to examine literature and film as integral elements of African-American experience, heritage, and culture, from the Civil War to the present.

"Arabic and Christian Influences on Western Culture in the Middle Ages." The Renaissance of the fourteenth century brought forth a new flowering of learning in Europe in science, art, music, politics, and economics. This course investigates how forces outside of Europe, in particular the Arab world, had major influences on this rebirth of learning.

"Psycholinguistics and Science Fiction." This course presents a psycholinguistics investigation of the impact of the influence of language on the perception of reality as exemplified in selected works of science fiction.

"Classical Experiments in Science." In this course, classical science experiments are studied in their historic intellectual context and reproduced in the laboratory. This course is built around nine experiments, three in biology, three in chemistry, and three in physics. Students recreate the conditions that existed in the labs at the times of the experiments, conduct the experiments, and report their findings in the context of the understanding of the day.

"The Ethics of Sport." This course examines some controversial issues in contemporary sport within the context of several major ethical frameworks. This course draws heavily on both philosophy and sociology.

"Cultural Entrepreneurialism." In this course the relationship between the cultural importance and interpretation of the artifacts of Connecticut and their potential as sites for tourism and economic development is explored. Historical, cultural, literary, and economic impact are assessed in relation to geography, population, education, cultural expectations, and funding and long-range planning resources.

After completing the four honors seminars, students write an honors thesis in their major discipline under the guidance of a professor in the major department. Up to six credits may be awarded for this thesis. The results of the research are to be presented orally to members of the student's major department and to members of the Honors Committee.

In order to remain in the program, students must maintain a cumulative grade point average of at least 3.3 throughout their studies at UNH.

Advantages of the Honors Program

In addition to a challenging and exciting curriculum, the Honors Program offers:

Financial Aid: A student who has successfully completed the four seminar courses described above and

one additional semester of work on an honors thesis, all with a cumulative grade point average of 3.3 or higher, will be granted a 50% tuition reduction by UNH for the final semester in residence at UNH. In addition, students in the Honors Program with a cumulative grade point average of 3.5 or higher and who are either rising juniors or seniors are eligible to apply for one of six John Hatfield Scholar awards. These competitive awards are $1,000 per semester tuition scholarships, awarded to Honors Program students with high grade point averages who are active in student life and community service. In addition to the financial award, John Hatfield Scholar recipients receive special parking privileges, a bronze medallion, and a certificate of recognition.

Small Classes: Honors program classes provide an opportunity for participation and discussion in a setting where students know their instructors and their fellow students especially well.

Recognition: A student who successfully completes the honors program, including the honors thesis, will be designated as an Honors Scholar on the transcript and will receive an Honors Scholar medallion awarded at graduation. Thus, prospective employers, graduate schools, and other institutions will be aware of this extra accomplishment in the student's pursuit of the undergraduate degree.

Developmental Studies Program

The developmental studies program is designed to strengthen the basic skills of entering students. Courses within the program are taught by members of the faculty of the mathematics department and the English department.

The English department offers two developmental courses: E102 Academic Reading and Speaking and E103 English Fundamentals. These courses offer students a comprehensive study of the basic reading, speaking, and writing skills necessary in using the English language effectively. M103 Fundamental Mathematics is taught by the mathematics department.

Placement in these courses is determined by examinations given by the respective departments. Such placement becomes a first priority for affected students because the university believes that such students can become successful college students only upon correction of skill deficiencies.

Please note that although E 102, E 103, and M 103 each carry three college credits, these cannot be applied toward students' degree programs. E 103 and M 103 usually meet for up to six hours per week to provide intensive help.

Complete descriptions of the developmental courses appear in this catalog as part of the course offerings of the mathematics department and the English department.

Freshman Experience Seminar

In their first year, college students face a number of new challenges. The Freshman Experience Seminar at UNH is designed to help students make the transition from high school to college.

This program incorporates the talents of more than thirty university personnel, both faculty and staff, and reflects the University of New Haven's commitment to high-quality student advising.

During their first semester, all new freshmen are required to take the ten-week team-taught FE 001 Freshman Experience Seminar, which addresses such topics as academic standards, diversity, time and stress management, college life versus high school life, university relationships, responsible human sexuality, exploration of self, alcohol and substance abuse, and real-life learning. The goal of this seminar is to give students the tools to help them understand and succeed in what can be, and increasingly is becoming, a very competitive environment. FE 001 is also a wonderful support system for students who are away from home for the first time. FE 001 is mandatory for all incoming first-time freshmen with no previous college experience and is a requirement for graduation.

A key component of the Freshman Seminar involves introducing the student to his or her academic advisor, who will serve as the link between the student and the academic regulations of the university.

UNIVERSITY OF NEW HAVEN
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THE UNIVERSITY COMMUNITY

The University of New Haven provides an environment designed to foster the personal growth of its students. Through its programs, services, and facilities, it provides the opportunity for students to become involved in meaningful activities which can develop into lifelong interests. These activities include recreational, social, community outreach, professional, and, of course, academic pursuits. In addition, the campus provides most of the services needed to assure the comfort and well-being of its students.

Academic Support Services

Academic services are provided to facilitate and enhance students' academic progress through the university by furnishing guided access to advisory sources and ancillary support systems. Many of the available services are described below.

Office of Academic Services

The Office of Academic Services, located in Maxcy Hall, provides a wide range of academic support to day and evening undergraduate students.

Academic Skills Counselors work with students individually or in small groups to strengthen abilities or make referrals to other qualified personnel on campus. They help students develop an individualized study strategy that focuses on textbook reading, lecture note-taking, time management, learning and memory strategies, and test-taking skills.

The office provides monitoring services to enable counselors, mentors, and coaches to assess the students' progress in their courses. The office also coordinates the efforts of the mentors responsible for working with students who are enrolled in the developmental math and English courses. The office also provides advisors for the activities of both the day and evening Honor Societies. The office provides access to the Student Ombudsman, who can assist in the resolution of student complaints, perceived grievances, and/or concerns.

Study Abroad

This newly created program is designed to give juniors and seniors the opportunity to experience different cultures while earning credits towards their degree. The office will provide information and guidance to assist students with finding a study abroad program that meets their educational, social, and cultural interests and objectives. For more information go to www.newhaven.edu/studyabroad/.

Center for Learning Resources

The Center for Learning Resources (CLR) offers free tutoring to students seeking extra help with their studies. The tutoring staff, over twenty instructors in all, is comprised largely of professionals who hold advanced degrees in their fields and who are committed to aiding the learning process. Tutoring is available six days a week throughout the semester.

The CLR includes three labs: The Math Lab offers help with mathematics, science, and business courses; the Writing Lab offers help with all writing assignments. Both labs operate primarily on a drop-in basis, but the Writing Lab also offers appointments. The computer lab is equipped with the latest Microsoft software, math tutorials, and Internet access.

Developmental Studies Program

The developmental studies program is designed to strengthen the basic skills of entering students. Courses within the program are taught by members of the faculty of the Mathematics department and the English department. (See the University Curricula section of this catalog for additional information.)

Freshman Experience Seminar

The Freshman Experience Seminar at UNH is designed to smooth the transition of first-time students from high school into the substantially different environment of a university. (See the University Curricula section of this catalog for the course description for FE 001, the Freshman Experience Seminar.)

Student Services

The University of New Haven cares deeply about the well-being of its students. A variety of services are available on campus to meet needs ranging from career advising to health care. Every effort is made to accommodate special student needs, such as helping international students to adjust to a new culture or ensuring that classes and facilities are readily accessible to students with disabilities. Many of the available services are described in the following pages.

Campus Card Office/Parking Permits

The UNH Campus Card offers many services and advantages for all members of the UNH campus community. The Campus Card is a credit-card sized, color photo identification card. It is to be used as the official UNH library card and residential meal plan card, for security access identification, and for a number of other services.

All new students are required to obtain a Campus Card in order to register for a parking permit. The Campus Card must be renewed by all returning students at the beginning of the Fall term every year. Campus Card photos are taken at Echlin Hall on the main campus. Campus Card Office hours are posted at the beginning of each term.

Resident freshmen are not permitted to have vehicles on campus, or parked on city streets in the neighborhoods adjacent to campus.

In the interest of maintaining good relations with our neighbors, it is important that resident students limit parking to the designated ON CAMPUS parking areas. Resident student parking on city streets in the neighborhoods adjacent to campus is prohibited by the university. Vehicles in violation are subject to university sanctions including, but not limited to, UNH parking tickets.

The University of New Haven is not responsible for damage to, or theft from, personal vehicles parked on university property.

New students may obtain a main campus parking sticker for their cars or motorcycles at the Campus Card Office or at the University Police Office located in the lower level of the Campus Bookstore. All cars must display a UNH parking sticker; vehicles parked in violation may be ticketed or towed. Detailed information on parking regulations, violations, and reporting of accidents is contained in the *Student Handbook.*

University Police Office

The staff of the University Police Office, located in the lower level of the Campus Bookstore, are certified police officers who undergo continuous training and who have been trained in emergency medical procedures, first aid, and CPR. They conduct regularly scheduled campus patrols and work closely with local, state, and federal agencies to enforce the laws of the State of Connecticut, especially those most pertinent to campus safety and security. The University Police Office is fully staffed 24 hours a day.

Career Services Center

The mission of the University of New Haven's Career Services Center is to contribute to the life long development and career advancement of students and alumni, and the continued development of a vibrant network of its alumni, students, faculty, and friends. The mission will be supported by its overarching goal of *"**EMPOWER**"ing* the university's vested constituencies through: **E**ducation, **M**otivation, **P**ersonal development, **O**pportunities, **W**isdom, **E**mployment, and **R**eporting.

The Career Services Center provides services for students, alumni, faculty, and employers. These services include assisting with career planning and job searching, preparing and reviewing resumes, mentorship opportunities, and interviewing skills. Individual appointments may be scheduled by phone. The Career Services Center may also be contacted through e-mail -

JOBS@newhaven.edu - or through our website, www.newhaven.edu/careerservices. To participate in the Career Development Days and the UNH Virtual Career Fairs, undergraduate students must visit the Career Services Center at least once each academic year, as well as have an electronic resume and Professional Code of Conduct contract on file with the CSC.

Student Employment

During each academic year, employer representatives visit the campus to interview graduating University of New Haven students. While the CSC is not an employment service and does not guarantee jobs, it does maintain extensive listings of both full- and part-time positions to provide a common meeting ground for employers and prospective employees. Students will find this useful in locating part-time and full-time jobs while in school and employment following graduation as well. Alumni seeking positions are also encouraged to use the services of the office.

Employers wishing to list positions need only call or write, giving a description of the position available and other pertinent details. There is no placement fee charged for these services.

Information

The CSC publishes updates of recruiter visits in *The Charger Bulletin* as well as information regarding Career Development events, the employment outlook for graduates, and job search hints. Career Development information is also provided in *Insight,* the UNH alumni publication.

Cooperative Education

Cooperative Education (Co-op) is an academic support program that enables students to combine career-oriented, paid, full-time or part-time work experience with their college education. Co-op students benefit by being able to explore career interests firsthand, by gaining valuable work experience related to their majors, and by earning money to assist with their college expenses.

How Co-op Works

Students should inquire about Co-op when they begin their degree programs. Work assignments start later, usually at the end of the sophomore year. The keys to a successful Co-op experience are flexibility and preparation. Co-op coordinators advise and counsel students in each academic area, helping students to prepare resumes and develop interview skills.

The flexibility of the UNH Co-op program gives students a chance to schedule plans of study and work which fit their needs. Undergraduate students attend classes for the first two years of college, and they prepare for work assignments which start at the end of the sophomore year. Juniors and seniors alternate classes with co-op work which may last four or six months. Transfer students typically complete one semester on campus and may then enter the co-op cycle, provided that they have completed their sophomore year. Individual cases vary, and students should review their needs with Co-op coordinators.

The variety and number of co-op employers attest to their recognition that cooperative education is an effective way to identify and train future employees. Active co-op employers include: American Cyanamid, Black & Decker, Corometrics, Dow UT, Dictaphone, Pitney Bowes, Pratt & Whitney, Sikorsky, and Remington Products as well as state and federal agencies. Student assignments include computer programming, accounting, counseling, criminal investigation, and engineering. Students may live in university housing while doing work assignments in the greater New Haven area, or they may work with their Co-op coordinators to develop jobs closer to home.

Interested students will meet with a Co-op coordinator to review eligibility requirements and the plan of study for their degree program. Co-op plans vary, which makes it important for students in the College of Arts and Sciences, the Schools of Business, Engineering, and Public Safety, to take advantage of the individual attention their Co-op coordinators will provide. Students should contact the Dean's office of their college/school to be directed to the appropriate Co-op coordinator.

Counseling Center

The Counseling Center offers services designed to help students with problems that may interfere with their academic, social, or personal activities. The services provided include confidential personal, academic, and vocational counseling and testing, personality assessment, and educational assessment.

Student Ombudsman

The student ombudsman serves as a neutral party to whom students (and parents) can appeal for resolution of complaints, perceived grievances, or concerns. The student ombudsman mediates disputes and attempts to develop an equitable resolution between the involved parties. For more information, please call (203) 932-7213.

Disability Services and Resources

The Disability Services and Resources Office is responsible for and committed to providing services and support that promote educational equity for students with disabilities, either temporary or permanent. The office provides assistance and information on issues of access and full participation for students with disabilities. Any UNH student with a disabling condition can benefit from these services. Referrals and inquiries concerning matters relating to students with disabilities and/or reasonable accommodations should be directed to this office.

The staff works with those who self-identify in the following categories:

- mobility/orthopedic disabilities
- specific learning disabilities
- attention-deficit disorders
- vision and hearing impairments
- head injuries
- psychological/emotional disorders
- chronic health-related disabilities
- speech impairments

Staff members serve as advocates, liaisons, and planners for ensuring access to academic, cultural, and recreational offerings of the campus and are available to students whenever questions or problems arise. The director assists the university's 504/ADA Compliance Officer with oversight of the university's compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA), and other government regulations. The director also handles student grievances, whether informal or formal, regarding allegations of discrimination based on disability.

In order to receive accommodations and/or services, a student is responsible for self-identifying as a student with a disability, submitting appropriate documentation, making a specific request for reasonable accommodations, and following established policies and procedures for arranging accommodations each semester/trimester.

The Disability Services and Resources Office is located on the ground level in the rear of Sheffield Hall. The director can be reached at (203) 932-7331. The university's 504/ADA Compliance Officer can be reached at (203) 932-7199. TDD Number is (203) 932-7332.

Evening Services

Evening Services is a "one stop" office specifically designed for evening graduate and undergraduate students. It combines the functions of Admissions, Financial Aid, Records, and the Bursar's Office, while working closely with the Office of Academic Services to ensure a "user-friendly" environment for the

Measles and Rubella

To All Students (full-time undergraduate, part-time undergraduate day and evening, full- and part-time graduate): Students must provide documentation of two valid measles vaccinations. The first must have been given after 1/1/69, and that date must be after your first birthday. The second must have been given after 1/l/80. Also, a rubella vaccine must have been given after your first birthday. Blood tests (showing immunity) from a laboratory will also be accepted. It is the policy of the university to withhold registration each semester for non-compliance. Proper immunization information must be on file in the Health Services Office.

evening student population. In addition, the Evening Services staff is available to meet student needs and answer questions regarding all UNH activities, including student advising, on a limited basis.

The Evening Services Office is located in Kaplan Hall, room 210. Hours of operation are Monday through Thursday, from 10:00 a.m. until 7:00 p.m., and Friday, 8:30 a.m. until 4:30 p.m. You can reach staff members by calling (203) 932-7361, fax to (203) 931-6063, or by email, eveningservices @newhaven.edu.

Health Services Center

The University Health Services Center is open to all university students without charge. Located on the ground level in the rear of Sheffield Hall, the center is staffed with two registered nurses and part-time physicians. The Health Services Center provides initial care for minor illnesses and injuries, as well as diagnosis, referral, and follow-up care for more serious conditions. Also provided are care and counseling in health-related issues. The Health Services Center coordinates the health insurance program sponsored by the university.

A part of the health program is a weekly women's clinic which takes place at the health center and covers gynecological problems, birth control, and sex-related issues.

One requirement of the center is that all students entering the Full-Time Division provide documentation of their medical and immunization history by completing the health form provided by the Undergraduate Admissions Office and returning it to the Health Services Center. All students who plan to live in residential housing must provide proof of having received a meningitis vaccine. These requirements are in compliance with the State of Connecticut Health Department's guidelines for immunization and disease control.

International Services

Each year the University of New Haven admits students from many nations. These students, representing more than fifty different countries, bring an international dimension to the campus.

The International Services Office provides for the special needs and concerns of all international students. The office staff assists students with U.S. Citizenship and Immigration Services regulations; provides information on travel to and from the United States; and advises students on academic, social, and cultural adjustment. The office also serves as a liaison between international students and the university community.

A wide range of programs has been developed, including publication of an international newsletter, special orientation events, information seminars, and an international festival. For more information, call (203) 932-7475 or email iso@newhaven.edu.

Multicultural Affairs and Services

The Office of Multicultural Affairs is responsible for the development, coordination, and support of educational, cultural, and social programs that build and foster awareness and appreciation of diversity throughout the university community. The office advises, supports, and provides leadership to underrepresented student groups and multicultural student organizations on campus.

Residential Life

The character of residential living is often a good indication of the spirit and quality of life on campus. The goal of the university's residential life program is to provide a living/learning environment which promotes academic and personal growth and a sense of community among students. A student's on-campus living experience is an integral part of the educational process.

Students live in nine residence halls: three for freshman and six for upperclassmen, supervised by Resident Directors responsible for the administration of each hall. Resident Assistants (RAs) live on each floor and serve as peer advisors, role models, and initiators of activities and programs.

University housing is occupied on an academic year basis, and it is recommended that all freshmen and sophomores live on campus unless they live with a parent or an extended-family member. All resident stu-

dents are required to purchase a university meal plan.

The Office of Residential Life refers those wishing to look for off-campus housing to a web site which lists students looking for roommates, apartments, condos, and homes in the UNH area. Students are responsible for any contract undertaken for such housing and should consider carefully the nature of that contract and the responsibilities incurred.

University Dining Services

University Dining Services facilities on campus include the Marketplace Food Court and Jazzman's Café, which are located in Bartels Hall Campus Center, the Quad Convenience Store, located in Botwinik Hall, and Pandini's and Sky Ranch Grill, located in New Hall.

Students may select from meal plans which include declining balance and board options. Purchasing a meal plan is highly recommended for all students and is required for all resident students. Detailed information on meal plans is available at the Dining Services Office.

Student Activities

Being a student at the University of New Haven means having the best of two worlds: an active on-campus community and the city of New Haven. Students interested in cultural, intellectual, or social pursuit have a wealth of opportunities from which to choose.

The Office of Student Activities, in conjunction with student clubs and organizations, provides a wide variety of events each week. With an increase in the quantity and quality of activities over past years, theme weekends such as Spring Weekend, Family Weekend, and Homecoming Weekend have been supplemented by an ongoing activities calendar of weekly events. There are plenty of opportunities to socialize and interact with fellow students, faculty, and staff—whether by enjoying a band, lecture, comedian, or magician; participating in volunteer opportunities; or taking a bus trip to a regional theater or recreation center.

Students are also encouraged to develop their cultural and intellectual interests by participating in literary, artistic, and dramatic events. Visiting artists, play and concert productions, invited lecturers, forums, and panel discussions are among the variety of programs available to students. UNH has more than eighty active student-run clubs and organizations.

Athletics / Intramurals / Recreation

Recognizing the importance of a broad range of physical and emotional outlets to a well-balanced college experience, the University of New Haven seeks to involve the student in various levels of active participation in games and sports, as well as to provide an opportunity for community and student support for its varsity intercollegiate program.

Varsity Sports

The University of New Haven athletics program makes up one of the most respected and successful NCAA Division II programs in the country.

The university offers 17 varsity sports: baseball, men's and women's basketball, men's and women's cross country, men's and women's indoor and outdoor track, men's golf, women's lacrosse, men's and women's soccer, softball, women's tennis, and men's and women's volleyball.

Students can also participate in cheerleading and the dance team throughout the school year. The Athletics Department coaching staff welcome all interested candidates and invite active involvement in support of our athletic programs.

The University of New Haven is a member of the National Collegiate Athletic Association (NCAA), the Eastern Collegiate Athletic Conference (ECAC), and the New York Collegiate Athletic Conference (NYCAC). UNH athletics have enjoyed national recognition over the years. The women's volleyball team has participated in 16 consecutive NCAA tournaments while baseball has reached the NCAA tournament 25 times, including 15 World Series appearances. The UNH women's basketball team captured the 1987 NCAA National Championship title and the 2006 NYCAC Conference Championship.

Intramural Programs

At UNH, students are offered a wide variety of sports and activities to participate in through the Intramurals program. Intramural sports represent the structured team and individual competitive part of campus recreation. All intramural sports and activities are open to women and men. The majority of our offerings are co-recreational; women and men play on the same team. Becoming involved with the intramural department is an excellent way to make your college experience at UNH memorable. You do not have to be an athlete to reap the benefits of our program. Becoming involved offers you a way to meet new people, stay physically active, and most importantly, have fun. The following activities are currently offered for all students, faculty, and staff: Pilates, Yoga, 3-on-3 Basketball, 5-on-5 Basketball, Flag Football, Volleyball, Ultimate Frisbee, Table Tennis, Racquetball, Latin Dance, Self Defense, Street Hockey, Billiards, Wiffleball, Softball, Soccer, Faculty/Staff Versus Student Games, Swimming, Tai Chi, Video Game Challenge, Cricket, Tennis, and more. All students are encouraged to "Come Out and Play"!

Athletics Facilities

The North Campus Athletics Complex consists of Robert B. Dodds Stadium (soccer and lacrosse), Frank Vieira Baseball Field, three tennis courts, a softball field, two outdoor basketball courts and Charger Gymnasium (basketball and volleyball). Charger Gymnasium houses a full-size basketball court, a fitness center, a racquetball court, and locker room/shower areas for students and faculty. A valid university ID is required for admittance to the gymnasium. Hours are regularly scheduled for times when varsity team practices or games are not in progress.

Clubs and Organizations

More than forty university student clubs and organizations serve interested students. Included are student chapters of professional societies, community service organizations, social groups, and special-interest clubs such as the International Student Association, the Black Student Union, and the Latin American Student Association. Each club and organization has a mailbox located on the top floor of Bartels Hall.

Fraternities and Sororities

National and local service, social, and honorary fraternities and sororities are active on campus. They sponsor programs such as banquets, game shows, the semiannual blood drive, fundraisers to benefit charities, and numerous hours of community service.

Off-Campus Activities

For those who want a change of pace from the college scene, the university's proximity to the city of New Haven offers students many cultural opportunities. Musical entertainment includes year-round performances by the New Haven Symphony Orchestra, live concerts at a variety of nearby venues, and local and national bands at many downtown clubs. Professional theater thrives in New Haven, home to three nationally recognized theaters, the Long Wharf Theatre, the Yale Repertory Company, and the Shubert. Some of the region's outstanding art collections can be seen on the Yale University campus.

On weekends the Connecticut shore, Cape Cod, the ski slopes of Vermont and New Hampshire, and New York City are just a car or train ride away.

Publications

Student publications include *The Charger Bulletin*, the student newspaper, and *The Chariot*, the annual yearbook. Students may volunteer their services to these student publications by contacting the USGA Office (see below).

Student Government

Separate undergraduate full, part-time, and graduate student councils have responsibility for initiating, organizing, and presenting extracurricular activities and acting as liaisons between students and university staff.

The Undergraduate Student Government Association (USGA) is a forum where undergraduate full-time students provide input to the administration

to improve all aspects of undergraduate education at the university. Student-elected senators represent the voice of their constituencies at weekly USGA meetings.

Students are strongly encouraged to get involved in leadership positions within the student government and other clubs and organizations. The university believes that leadership development is an integral part of all students' education. The USGA offices are located on the top floor of Bartels Hall.

The Evening Student Council is a board composed of students attending UNH evening classes. It has three primary objectives: (1) to promote the welfare of the evening student body, (2) to give counsel and encouragement to all evening students as well as to develop and encourage school spirit, and (3) to convey evening students' opinions to the administration and work with the administration in accomplishing student objectives.

Membership in the Evening Student Council is open to all undergraduate evening students enrolled in courses for credit. The council meets regularly, and all evening students are invited to participate. In addition to the standard elected officers, student relations and public relations chairs assist the social committee in planning a variety of special events each year.

WNHU Radio

WNHU is the University of New Haven's non-commercial, FCC licensed FM radio station located in the basement of Maxcy Hall. Daily operations are maintained by a departmental general manager, student station managers, and a staff comprised of undergraduate students, community volunteers, and faculty members. WNHU's signal emanates from the main campus at a frequency of 88.7 at a power of 1,700 watts and extends nearly thirty miles in every direction, reaching practically all of southern Connecticut and even parts of eastern Long Island. WNHU's programming is also available as streaming audio online at www.wnhu.net.

WNHU has recently undergone state-of-the-art renovations to its on-air and production studios, procuring professional-level broadcast equipment utilized by staff members to produce shows. While production of more than twenty hours of programming a day is a vital aspect of WNHU, it is not the only work to be done. Recording speeches on campus, providing music for on-campus events, and putting on shows in the community are examples of things WNHU does besides on-air functions, and the station plans to expand this area in the future.

With positions available for news, productions, sports, and promotions, WNHU isn't just about being a DJ, and there is a spot for anyone interested in a variety of concentrations. WNHU is open to any full-time or part-time undergraduate students, graduate students, faculty, staff, and community volunteers with an interest in radio and all its functions.

Campus Facilities

The university's 78-acre campus contains twenty-seven buildings that offer students modern laboratory and library facilities, smart classrooms, the latest in computer technology and equipment, an athletic complex, and residential facilities.

Located in West Haven, about ten minutes from downtown New Haven, the main campus includes administration, library, laboratory, computer, and classroom facilities as well as the admissions and financial aid building, bookstore, student center, and residence halls. Recent additions to the main campus include a new residence hall and an outdoor plaza.

The South Campus includes Harugari Hall and South Campus Hall, the student records building. The North Campus is the site of the university's athletic fields and gymnasium.

Some of these facilities are described in subsequent sections of the catalog.

Computer Facilities

The University of New Haven maintains many computer laboratories and teaching classrooms at various locations around the campus. The general access computer and Internet labs, open to all students at the university, are located on the first floor of Echlin Hall. During the undergraduate semesters, these labs are open:

Monday - Friday	8:30 a.m. to 10 p.m.
Saturday - Sunday	11:00 a.m. to 10 p.m.

The labs are open on an abbreviated schedule at other times during the year.

The general access lab provides students with word processing software, spreadsheet and database management software, SPSS statistical software, Pascal, C, C++, and other programming language compilers, and Internet connectivity. Laser printers are available for student use. The general access Internet lab is dedicated to providing students with access to email, World Wide Web, and other Internet protocols. The general access labs are staffed by a full-time Information Services Department staff member and several trained student assistants who are available to help anyone who has questions. The hardware and software available in the labs are continuously upgraded as computer technology changes.

Several schools and departments at the university maintain their own computer labs and teaching classrooms. The hours that these labs are open and the resources available are at the discretion of the individual school or department.

Computer facilities provided by UNH as of the Spring of 2006 are as follows:

Tagliatela School of Engineering,
Buckman Hall 225 and 225a

Tagliatela School of Engineering Multi-Media
Teaching Classroom, Buckman Hall 227

Hospitality and Tourism,
Harugari Hall 114

School of Business Lab and Teaching Classroom,
Dodds Hall 103

Department of Biology and Environmental Science,
Dodds Hall 305

Department of Visual & Performing Arts/Philosophy,
Dodds Hall 413

Department of Computer Science, Echlin Hall 208

Center for Learning Resources Tutorial Lab,
Maxcy Hall 106

General Access Computer Lab, Echlin Hall 113

General Access Internet Lab, Echlin Hall 115

CLR Modular Computer Lab, T-7

Information Services Modular Computer Lab, T-7

Marvin K. Peterson Library

The Marvin K. Peterson Library, named in honor of the university's first official president, was dedicated in 1974. It includes three floors of reading space, stacks, and reference areas. Information is made accessible through manual as well as electronic retrieval methods. Computers with Internet access and Microsoft Office Suite are available for research purposes. Students and faculty can plug in their laptop computers to connect to the campus network at 165 ports available throughout the library's three floors. Wireless networking is available in all areas of the library.

The library's home page is available via the web at http://library.newhaven.edu. It serves as a gateway to information and library services and includes the library's online catalog, the New Materials Acquisitions Lists, Library Guides, Interlibrary Loan Forms, full-text electronic databases, and a list of full-text electronic journals.

Materials are stored in a variety of formats, including online, print, audio, video, microform, and CD-ROM. Faculty and students in their offices, residence halls, or homes have access to electronic resources through the "PROXY Connection" available on the library's homepage. UNH subscribes to many online electronic databases in all subjects. Additional resources, including many full-text sources, are accessed in online databases such as DIALOG, LEXIS/NEXIS, OCLC, ABI/INFORM, Criminal Justice Periodicals, CCH Online, Computing, BNA Human Resources Library, Expanded Academic Index ASAP, Engineering Village and Compendex Web, FirstSearch, GPO Access, WestLaw, Hoover's, Science Direct, Reference USA, Country Watch, PsycARTICLES, Education Complete, and IRIS.

The UNH library's collection includes more than 239,000 volumes, 1,400 journal and newspaper subscriptions, electronic access to more than 16,500 full-text journal and newspaper titles, 535,000 pieces of microfiche, 12,011 volumes of microfilm, and 162,500 paper U.S. government documents.

The library is a U.S. Government Documents Depository Library and selects approximately one third of the U.S. government yearly output to support UNH programs.

UNH students may borrow materials from the Albertus College Library. Students who obtain a borrowing card from a Connecticut public library may borrow from other public libraries in the state. As a member of OCLC, UNH has access through interlibrary loan to the holdings of the more than 9,000 member libraries' over 61 million records.

Students are assisted by professional reference librarians. One-on-one consultations are available to locate information for research papers and projects. Freshmen receive instruction in how to use a library. Subject-specific library orientations are available for upper class and graduate students. Bibliographic instruction courses geared to international students are also provided.

Library guides, as well as selected instructional support resource materials, are provided; and a reserve collection is in place to support courses taught at UNH. Library Guides help facilitate access to information resources. Sample topics covered include Criminal Justice Resources, Dental Hygiene Resources, a Business Information Guide, How to Find Connecticut Law, How to Find Literary Criticism, and a Style Sheet for Research Papers.

Campus Store

The campus store sells all necessary texts, new and used, required for courses at the university. It also carries school supplies, greeting cards, imprinted clothing and gifts, candy, and a selection of magazines. A wide selection of software is available, priced at a substantial academic discount for currently enrolled students, at efollett.com.

The campus store buys back many used texts throughout the year; a student ID is required. It also handles class ring orders for the campus community, and will be happy to place special orders for any books.

Students who would like to have books and/or supplies shipped to their home or office may contact the bookstore at (203) 932-7030, or visit the bookstore's website at www.unh.bkstr.com.

Campus Copy

Campus Copy is a full-service copy, typing, and print shop located in the basement of Maxcy Hall on the main campus. Campus Copy offers a variety of services at reasonable prices, including resume composition, word processing, desktop publishing, photocopying, and binding. Campus Copy is independently owned and operated. For more information, call (203) 931-9844.

Bartels Hall

The renovated campus center provides a focal point for all student activities. Offering lounges, student offices, a large cafeteria, Jazzman's Cafe, and multiple meeting rooms, the facility has been designed to serve as a center for the student's non-academic college interests. Live entertainment and films are often presented in the evenings. Bartels Hall houses the offices of the Vice President for Student Affairs & Athletics, International Services, Multicultural Affairs, and Student Activities, as well as the Undergraduate Student Government Association groups.

Office of University Advancement

The Office of University Advancement works with the university community to develop philanthropic support for enhancement of the university's programs, facilities, and endowment. Gifts to the university enhance student financial aid, faculty development, equipment, library resources, and other institutional opportunities for growth.

The generosity of corporations, foundations, parents, students, alumni, and friends contributes to the excellence of the University of New Haven.

Alumni Relations

The Alumni Relations staff invite you to stay connected to UNH by enjoying the many activities and benefits sponsored by the university's Alumni Association. Committed to a lifelong relationship

among alumni, the Association fosters friendships and professional networking opportunities and promotes a host of educational, social, and athletic events.

Benefits include career development services, the chance to audit courses at a reduced fee, use of the university's library, low-interest credit card privileges, discounts on home and auto insurance, and much more. In 2003 we proudly introduced **UNH Online**, an online directory and interactive community, to help alumni stay in touch with friends and network with other alums. The service is free to all UNH alumni and can be accessed through the alumni web page at www.newhaven.edu\alumni.

Each fall, alumni are invited back to campus for Homecoming festivities. Throughout the year events include Alumni Cocktails and Networking, the Holiday Party, and our Scholarship Ball, which raises significant funds for student scholarships. Information about current activities is available through the website, our e-newsletter, and special mailings, including **Insight Magazine**. Please be sure to update your contact information so that we may keep you informed of the latest membership events and benefits.

The Alumni Board of Directors, a valued university advisory group, oversees the Association and works to strengthen university ties by promoting communication within the extended UNH community. If you have suggestions for your Alumni Association, please email us at alumni@newhaven.edu.

Research and Professional Facilities

Bureau for Business Research

The Bureau for Business Research offers access to databases for research on products, markets, competition, and international issues. In addition, the university's biannual, refereed academic journal, *American Business Review*, is published under the auspices of the bureau.

UNH Center for Dispute Resolution

The Center for Dispute Resolution at the University of New Haven is a focal point for the interdisciplinary study and practice of conflict resolution. The Center offers conflict management services to individuals and to businesses, institutions, governmental agencies, and community organizations. Services include mediation, design of conflict management systems, consultation, and training. Through educational programs for students and the community at large, the Center also strives to advance the understanding and application of alternative means of dispute resolution, including mediation.

Center for Family Business

The Center for Family Business (CFB) was founded in 1994 as a unique learning environment for family business members. Its mission is to help ensure the future and continuity of the family business, thus strengthening Connecticut's economy. The Center offers members a variety of programs which deal with issues faced by family businesses, regardless of the nature of the business. We offer our members eight different major programs each year, held in venues in both New Haven County and Fairfield County. These programs feature some of the top speakers in the field of family business and allow attendees to learn from one another. CFB also features small-group forums which consist of members in complementary circumstances. These groups function as ad hoc advisory boards to their fellow members. Periodically, we also hold focused programs which appeal to particular segments of our membership. Additionally, we provide our members with newsletters and other family-business educational materials. In partnership with UNH, the Center for Family Business is sponsored by the accounting firm of Bailey, Shaefer & Errato, LLC, certified public accountants; Mass Mutual Insurance Company, one of America's largest life insurance companies, and its affiliate, Sequence Financial Group; Gowrie, Brett & Young; U.S. Trust, with more than 150 years of investment and wealth management experience; and Wiggin & Dana, a leading Connecticut law firm.

The Center for Family Business provides access and referrals to a national family-business network, as well as a variety of business programs, services, and consultants. For further information, visit us on the web at www.newhaven.edu/cfb.

Center for the Study of Crime Victims' Rights, Remedies, and Resources

The UNH Center for the Study of Crime Victims' Rights, Remedies, and Resources is maintained under the auspices of The Henry Lee College of Public Safety. The Center will provide, and is in the process of developing, numerous initiatives to enhance the knowledge base on crime victims' rights and on services that assist crime victims through educational, training, and technical opportunities via the various academic disciplines and professional groups that study, advocate for, or serve victims.

These programs and services will be statewide, regional, and national in scope. They will include instructional programs; field and program evaluation research services; internships, fellowships, and visiting scholar programs; legal, legislative, and public policy analysis and advocacy; and publications, conferences, and symposia. Information is available through the director's office at the university.

ADMISSION TO THE UNIVERSITY

Full-Time Admissions

Jane C. Sangeloty, BA, Director

Undergraduate Admissions

Call: (203) 932-7319

Toll-free: 1-800-DIAL-UNH, ext. 7319
(1-800-342-5864)

The University of New Haven is committed to equal access to educational opportunities and welcomes applicants regardless of race, creed, color, religion, gender, national or ethnic origin, age, sexual orientation, disability, economic level, or geographic area.

Students wishing to take any course in the university, whether or not they seek a degree, must first satisfy the admission procedures specified below. Students should note that some specific academic majors may have additional admission requirements. You become a student of the University of New Haven only after you have completed the requirements listed below, been officially accepted, register for courses for your first semester, and make the appropriate tuition and fee payments. The university requires all accepted day division students to submit a non-refundable/non-transferable enrollment commitment fee in order to hold their placement in the incoming class. The fee is due May 1 for the fall semester and January 2 for the spring semester.

Admission Procedure: Full-Time Freshmen Students

- Complete the Undergraduate Application for Admission and submit it to the Undergraduate Admissions Office with the non-refundable application fee. Applications are available on our website, www.newhaven.edu.
- Submit an official copy of your secondary/high school transcript to the Undergraduate Admissions Office. A satisfactory General Equivalency Diploma (GED) is acceptable in place of a high school diploma. If you are currently attending secondary/high school and will be sending us an incomplete/in progress transcript, you must send us your final high school transcript with your graduation date as soon as it becomes available.
- Submit official Scholastic Aptitude Test (SAT) or American College Testing (ACT) scores. Our SAT code is 3663 and our ACT code is 0576.
- Submit at least one letter of recommendation.
- A personal essay is required. The essay is an opportunity for us to get to know you as a person, not just your grades and test scores. It also gives us an example of how you express yourself and demonstrates your ability to organize your thoughts. The personal essay should be between 250 and 500 words on a topic of your choice.

Admission Procedure: Full-Time Transfer Students

- Complete the Undergraduate Application for Admission and submit it to the Undergraduate Admissions Office with the non-refundable application fee. Applications are available on our website, www.newhaven.edu.
- Submit official transcripts from all the colleges/universities that you have attended.
- If you have completed less than twenty-four total earned credits from your previous college(s), you must submit an official copy of your secondary/high school transcript which includes your date of graduation. A satisfactory General Equivalency Diploma (GED) is acceptable in lieu of a high school diploma.

- If you have completed less than twenty-four total earned credits from your previous college(s) you must submit official Scholastic Aptitude Test (SAT) or American College Testing (ACT) scores. Our SAT code is 3663 and our ACT code is 0576.

Transfer credits are evaluated at the time of application and students will receive a preliminary transfer credit evaluation with their acceptance letter. The academic department to which the student applied will make the final determination of transfer credits.

Admission Procedure: International Students

The university admits international students for both fall and spring semesters. Official academic transcripts from all institutions previously attended, including secondary school, must accompany the admission application. Applicants whose native language is not English must take the Test of English as a Foreign Language (TOEFL). A minimum score of 190 computer-based/ 520 paper-based is required. The university also accepts a minimum score of 5.5 on the International English Language Testing System (IELTS).

Students who have been educated in English-speaking systems may substitute the SAT or ACT for the TOEFL. Depending on their academic background, students transferring from accredited institutions within the United States may also be required to submit TOEFL scores. Verification of financial support also must accompany the admission application.

Academically qualified applicants who do not meet the English language proficiency requirements can choose to complete an intensive English program approved by the University of New Haven. The university has an agreement with the ELS Language Centers (ELS) www.els.com and Embassy CES www.embassyces.com to provide intensive English training.

Undergraduate Admission Policy

Students are admitted full-time (four-course or five-course, 12-15 credit enrollment and registration load) or part-time (up to 11 credits). Acceptances are customized, and students are placed according to their academic needs.

Placement

Incoming students are placed in courses in English and mathematics according to their individual abilities as demonstrated through the university placement testing program or previous college records. Students whose major requires chemistry may be required to take a chemistry placement test.

Some students may be placed in courses designed to upgrade their skills in particular subject areas and prepare them for more advanced courses at the university.

Part-Time Admissions

- Complete the Undergraduate Application for Admission and submit it to the Undergraduate Admissions Office with the non-refundable application fee. Applications are available on our website, www.newhaven.edu.
- Submit an official copy of your secondary/high school transcript which includes your date of graduation to the Undergraduate Admissions Office. A satisfactory General Equivalency Diploma (GED) is acceptable in place of a high school diploma. If you have completed twenty-four or more total earned credits from your previous college(s), the high school transcript is not required.
- Submit official transcripts from all post-secondary colleges/universities that you have attended.
- If you have completed less than twenty-four total earned credits from your previous college(s) you must submit official Scholastic Aptitude Test (SAT) or American College Testing (ACT) scores. Our SAT code is 3663 and our ACT code is 0576.
- Students applying as non-matriculating students need only to submit the Undergraduate Application for Admission and the non-refundable application fee. Previous college transcripts may be required if students wish to take classes that have prerequisites.

REGISTRATION

Day Registration

Registration is the process of selecting classes each term. Registration includes faculty advising, a preliminary choice of classes, and fee payment. Final registration is not complete without these steps.

Students have assigned faculty advisors who provide guidance on academic matters and help students with the registration process. Normally, the advisor is the chair or coordinator of the student's major course of study or another faculty member designated by the chair.

There are two parts to registration: the completion of the registration forms and the payment of tuition. There may be a penalty fee for delaying either of these two processes beyond the end of the registration period and/or tuition due date.

Registration dates and procedures for currently enrolled full-time students will be posted in advance. A separate registration is required for each of the semesters, for summer sessions, for the winter intersession, and for the accelerated modules.

All new students who have paid the enrollment deposit will be mailed information about registration. Prior to the start of the fall and spring semesters, an orientation/registration program is held, at which time new students will select their courses.

Social Security numbers will be used on student records; students should be sure to bring their number when registering. Prospective students who do not have a U.S. Social Security number should apply for one before registration. Students from other countries who do not have U.S. Social Security numbers will be given a temporary number by the university; however, they are encouraged to apply for a U.S. Social Security number as soon as possible.

In conjunction with academic advisors, students are urged to plan their programs carefully before completing the registration forms, in order to avoid the need for requesting changes. Once the registration is completed, students must use signed drop/add cards to make changes.

Please note: No new full-time student will be permitted to register for classes until:

1. The nonrefundable enrollment deposit has been paid.
2. Tuition **in full** for the semester has been received. Students relying on financial aid to cover all or part of a semester's expenses must present evidence of the amount of money awarded. No new part-time student will be allowed to register for classes until tuition payment or financial aid arrangements have been made.

Course Overload Restrictions: Full-Time Students

Full-time students who wish to register for more than 15 semester hours in any one semester must follow special procedures and guidelines.

If the total number of courses to be attempted is 6 (excluding laboratory sections) and is in excess of the hours specified on the student's worksheet, the student must obtain written permission from his or her advisor and department chair and, in most instances, must have a cumulative quality point ratio of 3.20 or higher.

If the total number of courses to be attempted is more than 6 (excluding laboratory sections), the student must obtain written permission from his or her advisor, department chair, and academic dean. Such students are required to have a cumulative quality point ratio of 3.20 or higher.

Evening Registration

Students may register by mail prior to the announced deadline. A separate registration is required for each academic term students wish to attend. Auditors follow the same procedure and pay the same tuition and fees as students enrolled for credit.

The student completes the registration procedure by paying tuition and fees. There may be a penalty for delaying beyond the end of the registration period.

To avoid the need for changes, students are urged to plan their programs carefully before completing reg-

istration forms . Once the registration process has been completed, a change of registration requires the use of drop/add cards.

Course Load Restrictions: Part-Time Students

Part-time students are restricted to a maximum of 11 credit hours in any given term or semester, including the combined sessions of summer school.

Students wishing to take more than 11 credit hours per term or semester must complete the Classification Package Change Form (available through the Students Records Office) in order to change student status to that of a full-time day student. Full-Time Division tuition rates would then apply.

Alumni Audits

Alumni who audit courses pay a reduced tuition but must be cleared through the Alumni Office before registering. Auditing courses at the reduced rate is limited to courses at or below the level of the degree earned by the student at UNH.

Certificates

Students can take their first step toward an undergraduate degree by enrolling in a certificate program.

Each certificate is carefully designed as an introduction to a particular course of study. Later, students may choose to apply toward an undergraduate degree the credits they have earned.

Each certificate consists of a series of courses, usually fifteen credit hours or more in a specialized area. A minimum of one-half of the credit hours must be completed in residence. Please contact the appropriate academic department or Nicolas Spina, Director of Evening Services and Accelerated Programs, at nspina@newhaven.edu.

Summer Sessions

Day and evening undergraduate courses are offered during the summer in a series of sessions ranging from four to eight weeks in length. The first session begins shortly after the close of the spring semester. Resident dormitory students may therefore continue their studies uninterrupted through the entire summer.

The university welcomes visiting students from other colleges and universities who wish to transfer summer course credits back to their institutions. Credits earned at the University of New Haven are generally accepted by other schools, but students are urged to consult with their home institutions for any special requirements or procedures for credit transfer.

University of New Haven students can attend one or more of the UNH summer sessions to lighten their study load during the regular academic year, to reduce the time required for a degree, to prepare for other courses, to make up courses, or to take additional work beyond that required for a degree and still complete a program on schedule.

A list of courses offered during the summer is available in March.

Intersession Courses

A number of undergraduate courses are offered during the period between the fall and spring semesters. These courses blend both traditional and innovative methods of instruction, including team teaching, field trips, lectures, laboratory work, and research projects. A list of courses offered during Intersession is available in November.

ACADEMIC REGULATIONS

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- Transfer of Credit to the University
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Ways of Earning Credit

Academic Credit

Academic credit is granted on a credit hour basis. In addition to successfully completing regular courses, students may earn credit by independent study, coordinated courses, crediting exams or CLEP exams, or transfer of previously awarded credit from other institutions. These methods are detailed in the following pages of this section.

Transfer of Credit to the University

Students may transfer to the university after completing academic work at other institutions. Applications should be made to the Director of Admissions. If feasible, potential transfer students should visit the university and discuss their transfer credit situation with the chair or dean administering the program of interest. Normally, the university accepts credit from regionally accredited colleges on an equivalency basis. The regional institutional accreditation bodies in the U.S. are Middle States Association of Colleges and Schools, New England Association of Schools and Colleges, North Central Association of Colleges and Schools, Northwest Association of Schools and Colleges, Southern Association of Colleges and Schools, and Western Association of Schools and Colleges.

Students transferring from another institution must have at least a 2.0 quality point ratio based on a four-point scale. Credit is normally granted for under-

graduate courses completed with at least a grade of C, or its equivalent. Credit is not awarded for pass/fail courses. Credit transferred from a two-year institution is generally limited to sixty credit hours and restricted to freshman- and sophomore-level courses, unless otherwise approved in writing by the dean of the school in which the student seeks to enroll. Credit granted may be used for degree requirements if the transfer credit is for courses equivalent to the UNH requirements.

When a student's application is complete, a tentative analysis is made of transfer credit available. Final decisions on transfer credit are made by department chairs and must conform to school and university policies. Prospective students may be required to take qualifying or placement examinations for specific courses.

Plans of study for a University of New Haven degree should be agreed upon by both the transfer student and the department early in the first term of attendance in order to avoid course duplication and academic discontinuity.

For Transfer of Student Status, see following pages.

Courses Available at Other Colleges

University of New Haven students interested in taking courses at other colleges and universities should discuss this matter directly with their departments and consult the statement of policy established by the undergraduate school in which they are enrolled.

Coordinated Courses

In order to maintain continuity in a degree program, students are encouraged to use UNH Summer Sessions and Winter Intersession; however, courses taken by matriculated UNH students at regionally accredited institutions may be designated as "coordinated courses." Credit for such courses is accepted and posted on students' permanent records, and the grades are included in students' quality point ratios.

Credit for courses taken at a two-year institution is restricted to equivalent UNH courses at the freshman and sophomore levels. (**Students with junior or higher standing at UNH may not take coordinated courses at two-year institutions.**) Care should be taken in requesting coordinated course credit for courses given during intensive terms. It is UNH policy that intensive terms should span at least fifteen meeting days.

Prior authorization for a "coordinated course" designation must be obtained from the department(s) housing the student's major and the related course at UNH. The appropriate form must be obtained at the Registrar's Office, approved, and returned to that office before the course begins. Normally, approval is granted only for those courses which are equivalent to courses offered at UNH, and/or standard courses in a given discipline unavailable at UNH because of frequency of offerings, cancellation, etc., or inaccessible to the student because of temporary residency at a distant location. Complete detailed instructions can be found on the Coordinated Course form.

Students must be continuously matriculated at UNH while taking a coordinated course. Approval for a coordinated course will become void upon withdrawal or dismissal of the student.

Students are responsible for securing an official transcript upon completion of their work. Official transcripts must be mailed directly to the Office of the Registrar at UNH.

Advanced Placement

The university recognizes the program of advanced placement available to talented high school students through the College Entrance Examination Board. Students satisfactorily completing advanced placement courses in high school and the final examination prepared by the Educational Testing Service (ETS) may be given appropriate college credit if their courses are similar to those offered at the University of New Haven.

Educational Testing Service Advanced Placement examinations are graded from 1 to 5. Credit may be allowed when the grade earned is 3, 4, or 5. Students desiring to submit advanced placement courses for college credit should have all results of these courses and tests sent in with their application to the Admissions Office.

The University of New Haven accepts credit by examination from the College-Level Examination Program (CLEP), subject to academic department chair approval.

The passing percentile for CLEP and subject examinations is 50. Credit will be evaluated by the appropriate department chair.

Credit by Examination

A student who has at least a 2.0 cumulative QPR and has independent knowledge of the content of an undergraduate course offered by the university may, with the approval of the appropriate department chair and dean, take a special crediting examination in lieu of taking the course.

Students are reminded that they must earn at least thirty semester hours through regular UNH coursework if they are to meet the residency requirements for graduation.

Students may not take crediting examinations during the first semester in which they are enrolled.

External Credit Examinations

Learning which has been acquired through many traditional and nontraditional approaches can be measured and validated by objective procedures acceptable to the faculty of UNH. This learning must appropriately parallel the curriculum of the university in order to be awarded UNH credit.

The Admissions Office maintains a current listing of organizations which provide testing and other alternative credit procedures. The following list cites some of the more common sources:

College-Level Examination Program (CLEP): This testing program offers two types of examinations: (1) the general examinations in the five comprehensive areas of English composition, humanities, social sciences/history, natural sciences, and mathematics and (2) the subject examinations. The subject examinations range in value from three to six credits and are achievement tests in a wide variety of undergraduate college courses, primarily at the basic level. For information, contact CLEP, ETS, Princeton, NJ 08541.

Proficiency Examination Program (ACT PEP): This program may also be used to earn credits in certain academic areas. For information write ACT PEP Coordinator, ACT Proficiency Examination Program, P.O. Box 168, Iowa City, IA 52243.

Dantes Subject Standardized Tests (DSST): This is a program administered by Educational Testing Service (ETS) in conjunction with DANTES. The examinations are available to all military personnel. For information contact the Base Education Services Officer. ETS has made these examinations available to civilians. Civilians should contact the Program Administrator, DSST, ETS, Princeton, NJ 08541.

Servicemembers Opportunity College (SOC): The University of New Haven is a member of the SOC Bachelor Degrees for Soldiers (BDFS) Network. This network is open to members of the armed services and their spouses. For information contact the Admissions Office or the Base Education Services Officer.

Modern Language Association Foreign Language Proficiency Tests (MLA): The MLA comprehensive tests are available in French, German, Italian, Russian, and Spanish. Undergraduate students may take Battery A of the examination only. Battery A includes speaking, writing, reading, and listening comprehension components.

Military Service School Courses: The university may also accept as transfer credit certain courses completed during in-service training. Veterans should request that official transcripts of in-service training be sent to the Admissions Office at the university.

Army, Navy, or Coast Guard veterans should write to: National Personnel Records Center, Military Personnel Records, 9700 Page Boulevard, St. Louis, MO 63132.

Marine Corps veterans should write to: Commandant, U.S. Marine Corps (Code DGK) Headquarters, U.S. Marine Corps, Washington, DC 20308.

Air Force veterans should write to: Community College of the Air Force, Maxwell Air Force Base, Montgomery, AL 36112.

Enrollees on active duty in the U.S. Armed Forces should arrange for DD Form 295 "Application for the Evaluation of Educational Experiences During Military Service" to be completed and forwarded to the Admissions Office from the duty station. Veterans of any period of active service should provide the university with a copy of DD Form 214 or other notice of separation for each period of service. This may assist in identifying possible sources of academic credit.

Advanced Study

Advanced study courses are offered to qualified students in the departments offering the degrees of bachelor of science or bachelor of arts. These courses may include a thesis, tutorial work, or independent study which permits the student to work intensively in areas of special interest.

Independent Study

In all courses of independent study the student and an advisor must jointly file a project outline with the registrar within four weeks of the beginning of the course. This outline shall serve as the basis for determining satisfactory completion of course requirements.

Normally, independent study is restricted to no more than six credits and open only to seniors, juniors, and exceptionally qualified sophomores. Students must have at least a 3.0 quality point ratio.

Regularly scheduled courses (that is, those offered at least once every four semesters) are not normally acceptable as independent study.

Field Experience

In all credit-bearing courses of field experience, including internships, practical theses, and work study, students will earn credit for the learning gained through the activity. The student and advisor must jointly file a project outline with the registrar within four weeks of the beginning of the course. This outline shall serve as the basis for establishing the mechanism by which the advisor will evaluate the learning to occur and thus for determining completion of course requirements. Please consult the academic deans to determine any restrictions.

Academic Status and Progress

Full-Time Students

Full-time student status is attained by registering for a minimum of 12 charge credits per semester, or equivalent term, on either a matriculated or nonmatriculated basis. Such status is continued to a succeeding term provided a minimum of 12 credits are completed in the term of record. Completion is defined as receipt of a letter grade of **A+ through D-, F, S, or U**. Other letter grades do not signify course completion.

Full-time students are eligible for all daytime student activities and benefits and are subject to Full-Time Division tuition charges and other relevant fees. It is assumed that full-time students will select the great majority, if not all, of their courses from daytime course schedules, unless needed courses are unavailable during the day.

Part-Time Students

Students who register for 1 through 11 charge credits during a semester maintain part-time status. Part-time status may be held by students attending UNH during the day or in the evening.

Matriculation

Matriculation is the formal act of registering to study for a specific degree offered by the university. Matriculation is, therefore, not automatic. A student must request matriculation by seeking admission to a specific university degree program. Formal acceptance into a degree program shall constitute the granting of matriculation.

Students seeking credit to be transferred to another institution, or wishing simply to audit courses or to take them without working toward a degree, need not matriculate. Nonmatriculated students must register to take their chosen courses, however, and will be allowed to enroll in courses only as space permits. It is the student's responsibility to seek matriculation should he or she later decide to pursue a University of New Haven degree.

Academic Worksheets

Generally, matriculating students are and remain subject to those requirements defined in the undergraduate catalog and listed on the academic worksheet in effect for the semester of initial enrollment.

If students change academic majors, they will be subject to the requirements of the catalog/worksheet in effect at the time of the change.

If students withdraw or are dismissed from the university and decide to return at a later date, they will be subject to the requirements of the catalog/worksheet in effect at the time of their return.

Part-time students are permitted a total of three semesters (consecutive or otherwise) of break in study during which they may continue on the original academic worksheet. After the three-semester limit has been reached, students will be subject to the requirements of the new catalog/worksheet in effect at that time.

If students initiate a leave of absence, they will continue on the same academic worksheet upon their return to the university. However, students who fail to return after the designated leave of absence period will be considered withdrawn students and subject to the catalog/worksheet requirements outlined above.

Students who begin their studies based on a catalog/worksheet which subsequently changes may request to use the latest worksheet for that major; however, students are not required to switch to the current worksheet when a change occurs unless they have been away from the university as described above.

Class

In order to be classified as a sophomore, a student must have completed 27 credit hours in an approved program; a junior, 57 credit hours; a senior, 87 credit hours; a fifth-year student, 117 credit hours.

Transfer of Student Status

Undergraduate students who wish to change their status from full-time to part-time or from part-time to full-time must complete a Classification Package Change form available from the Registrar's Office.

Part-time students who wish to enroll in more than 11 credit hours in any term must change their status to full-time. Full-time students wishing to change to part-time status may become part-time day or part-time evening students. To qualify for part-time evening status, a student will be restricted to enrolling in evening courses only.

Major

Each matriculated student must designate a specific degree program, called a major. Major program requirements are detailed in the catalog under the relevant department listing. A minimum cumulative 2.0 QPR in major courses is required for graduation. See program requirements for further clarification of specific courses/requirements.

Minor

Many baccalaureate programs may be supplemented by an associated minor program, which normally includes five or six courses. The university encourages students to augment their major program with an associated minor. Details can be obtained from the appropriate department.

A worksheet for the minor, developed by the appropriate department, must be submitted to the Registrar's office in order for a student to receive credit for the minor. A minimum of one half of the courses required for any minor must be completed in residence at UNH.

Grading System

The following grading system applies except where otherwise specified, both to examinations and to term work. The weight of a final examination grade is a matter individually determined by each instructor. See the Quality Point Ratio section below for additional information.

A+	–Excellent	= 4.0 quality points
A	–Excellent	= 4.0 quality points
A-	–Excellent	= 3.7 quality points
B+	–Good	= 3.3 quality points
B	–Good	= 3.0 quality points
B-	–Good	= 2.7 quality points

C+ –Fair = 2.3 quality points
C –Fair = 2.0 quality points
C- –Fair = 1.7 quality points
D+ –Poor = 1.3 quality points
D –Poor = 1.0 quality point
D- –Poor, lowest passing grade = 0.7 quality points
F –Failure = 0 quality points
AU –Audit. Indicates course was attended without expectation of credit or grade. (0 quality points)
INC –Incomplete. Indicates one of the following two possibilities:

1. Some work remains to be completed to gain academic credit for the course. An INC is assigned in the first instance at the discretion of the instructor. This assignment shall not be automatic but shall be based upon an evaluation of the student's work completed up to that point and an assessment of the student's ability to complete course requirements within the allowed time limit. Work to remove an INC must be performed within the 12 months following the last day of the semester in which the INC is incurred or earlier if the instructor so requires. When such work is completed, the instructor will assign a final grade for the course.
2. The student has failed to complete unfulfilled academic assignments within the specified 12 months, and the grade of INC has been entered on the student's permanent transcript. **No further opportunity to complete the course will be available to the student after this time.** (0 quality points)

DNA –Did Not Attend. Indicates nonattendance in a course for which a student had previously registered but not officially dropped (0 quality points)

W –Withdrawal. Indicates withdrawal from the course after the first half of the semester or withdrawal from the university after the twelfth week of classes. The grade of W will not be assigned to any student who has taken the final examination in the course. (0 quality points)

S –Satisfactory. Given only in noncredit courses. (0 quality points)

U –Unsatisfactory. Given only in noncredit courses. (0 quality points)

Grade Reports

Reports of the final grade in each subject will be mailed to the student soon after the close of each semester.

Grade reports may be withheld from students who have delinquent accounts with the Business Office, Campus Police, Library, Housing, Athletics, Health Services, or the Campus Bookstore.

Quality Point Ratio

The academic standing of each student is determined on the basis of the quality point ratio earned each semester. The quality point ratio (QPR) is determined by using the quality points assigned to each grade a student earns.

The quality point value for each grade earned during a semester is multiplied by the number of credit hours assigned to that course as listed elsewhere in this catalog. The sum of these points is the total number of quality points earned during the semester.

This sum is divided by the number of credit hours attempted (hours from courses with grades of A+ through F) to obtain the quality point ratio.

The cumulative quality point ratio is obtained by calculating the quality point ratio for all courses attempted at the University of New Haven. Course grades of AU, DNA, I, S, U, and W are not calculated in the overall QPR since they carry no quality points.

See the "Grading System" section above for more information.

Satisfactory Progress

For students matriculated in the Full-Time Division, satisfactory progress toward a degree is defined as successful completion of 24 credits applicable to that degree program during an academic year. This should include registration for at least 12 credits per semester and successful completion of at least nine

credits per semester. "Completion" is defined as the receipt of a final letter grade (A+ to F) but not the receipt of a Withdrawal (W), Did Not Attend (DNA), or an Incomplete (INC). "Successful completion" is defined as the receipt of a passing letter grade (A+ to D-). Decisions on student status are made by the Registrar.

Students are required to maintain a minimum cumulative quality point ratio in accordance with the following scale:

Quality point ratio of 1.75 for 3 to 27 credits attempted

Quality point ratio of 1.85 for 28 to 57 credits attempted

Quality point ratio of 2.0 for 58 or more credits attempted.

Dean's List

The dean's list honors students who demonstrate excellence in their academic performance. Full-time students who earn a quality point ratio of 3.50 or better in any one semester will be appointed to the dean's list for that semester.

Part-time students who have accumulated a minimum of 14 credit hours of coursework at the university will automatically be considered for the dean's list at the end of each semester. A cumulative quality point ratio of 3.50 or better is required.

Probation and Dismissal

Failure to maintain satisfactory progress as defined previously will place students on academic probation for the following semester of enrollment. Students are automatically dismissed when they receive a third probation (or, if readmitted from a previous dismissal, any subsequent probation).

When a student's quality point ratio for any one semester is less than 1.0, but the cumulative quality point ratio indicates satisfactory progress as described above, then an academic warning will be issued.

First-semester freshmen earning a quality point ratio less than 1.0 are automatically placed on academic probation.

Students who fail to maintain the minimum QPR for satisfactory progress but are not dismissed are placed on academic probation. Probation serves as a warning that lack of improvement will eventually prevent satisfaction of graduation requirements. Because UNH is dedicated to helping students to be successful, probationary students are required to work with assigned academic skills counselors.

Students on probation are limited to four courses (13 credits) during the term of their probationary status. They may also be required to retake courses in which they performed poorly. The university may void a registration for more than four courses. Also, any courses above the four-course limit taken at another institution during a period of probation will not be accepted in transfer to UNH.

Academic probation of transfer students is determined in accordance with the same graduated, minimum cumulative quality point ratio scale as for nontransfer students as detailed above. In determining a transfer student's academic standing, the student's total semester hours completed–those transferred from other colleges plus those received at the University of New Haven–are applied to the minimum cumulative quality point ratio scale.

Repetition of Work

A course which a student has completed may be repeated only with the consent of the chair of the department which offers the course or if a minimum grade is required to enroll in a subsequent course in a series. If a student achieves a higher grade in the second attempt, that grade rather than the first will be used to compute the cumulative quality point ratio. However, both the higher and lower grades in the course remain on the student's permanent record.

When credit for a graded course previously attempted at UNH is earned through a method which does not carry a grade with a quality point value, the previous instance of that course will be removed from the cumulative QPR calculation. However, both instances will be recorded on the student's permanent record and transcript.

Dismissal/Readmission Procedure

Students are dismissed from the university at the end of each semester or trimester on the basis of the criteria listed in "Probation and Dismissal." Notification is made by the Registrar via certified letter. This letter will specify the time span for appeal and the criteria for appeal.

Upon written submission by the student, an appeal will be heard by the Academic Standing and Admissions Committee. If the appeal has merit and is granted, the student will be so notified by the chair of the committee. The committee may require special arrangements or conditions to allow the student to continue. Satisfaction of such conditions is an obligation of the student.

If there is no appeal or if an appeal is denied, the student will be removed from any courses for which the student is registered that have not yet begun. The student may continue in any intersession or summer course which began before the date of dismissal but may not start any courses after dismissal is effective. Dismissal action will be noted on the student's academic transcript.

A third probation will result in dismissal from the university. The student will be allowed to complete any incomplete courses (subject to established rules and restrictions), and grades/credits earned will be transferrable to other institutions. However, the dismissal will remain irrevocable, not subject to appeal.

Readmission

Application for readmission of students who have been dismissed and who either did not appeal or whose appeal was denied normally will be considered only after the lapse of a semester and only when students provide evidence which indicates probable success if readmitted.

Unusual circumstances may permit earlier application if a student's dean and department chair successfully petition the committee to review the applicant's case.

Requests for readmission should be submitted in writing to the chair of the committee at least three weeks before the opening of the semester and should include evidence supporting the student's belief that he or she will succeed if readmitted.

A student who has been absent from the university for one or more semesters must submit a new application and pay another application fee. If the student has attended another college or university in the interim, an official academic transcript is required from that institution. Following the receipt of the above material, action will be taken on the application for readmission. Since the student is not matriculated at UNH during this period, no coordinated courses will be accepted. Upon successful readmission, students will register for classes for the first term of their return through the Undergraduate Admissions Office.

Readmission is not automatic. The committee reviews each application and makes a decision on acceptance, rejection, or conditional acceptance of students.

A student who is academically dismissed and readmitted by the Academic Standing and Admissions Committee may be prohibited from continuing with the academic program in which he or she was enrolled at the time of the dismissal. If the committee readmits the student to a new program, the student shall have the same automatic right to enrollment in that program as any other newly admitted student.

Changes

Dropping/Adding a Class

Students who wish to make a change in class schedule must complete a Drop Card or an Add Card or both. These are available from the Registrar's Office. All adds and drops require the signature of the instructor and the student's advisor. In the case of part-time evening students, drops require the signature of the instructor only, although it is recommended that students consult with their advisors.

The last date to add classes is two weeks into the semester and is listed in the academic calendar. No classes may be added after this date. All changes should be completed prior to the second week of class so that students may be properly registered in the correct sections.

Withdrawal from a Class

Students desiring to withdraw formally from a class may do so before the last day to drop courses as published in the academic calendar. Formal withdrawal removes the student's name from the class roll and removes the course listing from the student's record and transcript. The student must obtain a Drop Card from the Registrar's Office, complete it, sign it, and obtain the signature of the instructor and advisor. The card is then returned to the Registrar's Office.

Students withdrawing from a class after the last day to drop courses will receive a grade for the course as assigned by the faculty. The course and grade will appear on the student's grade report and transcript.

Filing a Drop Card does not qualify the student for cancellation of any university tuition or fee. Tuition refunds are subject to the refund policy outlined elsewhere in this catalog.

Changing a Major

Students wishing to make a change in major or program must meet with the chair of the department into which they wish to transfer. In consultation with the student, the chair will prepare a change of major form and forward it to the Registrar's Office.

Leave of Absence

Matriculated students may interrupt continuous enrollment by electing to take a leave of absence from the university for medical or personal reasons, to pursue a program of study at another institution, or to engage in other off-campus educational experiences without severing their connection with the University of New Haven through withdrawal. Before taking a leave of absence, students are encouraged to discuss their particular situation with an academic advisor, the dean of their school, or a counselor in the Counseling Center.

The rules regarding leaves of absence are:

- All noninternational students must file for a leave of absence through the Registrar's Office; international students must initiate the leave of absence through the International Student Services Office.
- Students who are on university disciplinary probation are not eligible for a leave of absence.
- A student who has been dropped or dismissed from the university for disciplinary or academic reasons is not eligible for a leave of absence until properly reinstated.
- A student who has withdrawn as a degree candidate is not eligible for a leave of absence. If a student withdraws while on leave of absence, the leave is invalidated.
- Leaves are not required or granted for summer periods alone.
- Normally, leaves are not approved for a period longer than two semesters. Under special circumstances, a leave of absence may be approved for a maximum of four semesters or two years.
- If students wish to return later than the semester originally stated on the leave of absence form, they must apply through the Registrar's Office for an extension of the leave of absence not to exceed the maximum period as outlined above.
- A student who plans to enroll for coursework at another accredited institution during a leave of absence should review program plans with his or her academic department advisor to verify eligibility for receiving credit at the University of New Haven.
- Taking a leave of absence may affect a student's financial aid. All students receiving financial aid are encouraged to contact the Financial Aid Office before taking a leave of absence.
- Students who fulfill the conditions of an approved leave of absence may return to the university and register for classes without applying for readmission; such students may preregister for the semester in which they plan to return.
- A student who does not apply for an extension or exceeds the maximum period but wishes to return to the university must be formally readmitted by the Undergraduate Admissions Office. Upon successful readmission, the student will register for classes for the first term of their return through the Undergraduate Admissions Office.
- All applications for leaves of absence after the twelfth week of classes must be approved by the Registrar before they are considered final.
- For leaves of absence completed during the first 12

weeks of the semester, the student's transcript will contain no record of courses attempted or grades received during that semester.
- Leaves of absence completed and approved after the twelfth week of the semester may result in the receipt of the grades for all courses in which the student is registered at the time of taking the leave of absence.

Withdrawal from the University

Students desiring to withdraw from the university must complete the necessary form at the Registrar's Office and notify each of their instructors. It is the student's obligation to complete this formal procedure. Failure to do so leaves the student liable for all of the current semester's tuition and fees and may result in grades of F being assigned in the student's courses.

Formal withdrawal must be completed during the first four weeks of the semester in order to obtain any cancellation of tuition and fees (as described elsewhere in this catalog) unless there are clearly extenuating circumstances and a formal appeal is made through the Registrar's Office.

Formal withdrawal which is completed at any time during the first 12 weeks of the semester will assure that the student's transcript will contain no record of courses attempted or grades received during that semester.

Formal withdrawal which is completed after the twelfth week of the semester could result in the receipt of the grades for all courses in which the student is registered at the time of withdrawal. Students should note that formal withdrawal after the twelfth week cannot be regarded as complete unless, in addition to the above requirements, it has been approved by the Registrar.

Because of the serious ramifications of formal withdrawal from the university, students contemplating this action should discuss the matter with their advisor or a counselor as soon as problems are perceived.

Transfer of Credit from the University

Credits may be transferred from the University of New Haven, a regionally accredited university, to any other college or university. If it is the policy of the other college or university, the student may be required to complete a letter of authorization allowing transfer of credit from the University of New Haven.

General Policies

Academic Honesty

The University of New Haven expects its students to maintain the highest standards of academic conduct. Academic dishonesty is not tolerated at the university. To know what it is expected of them, all students are responsible for reading and understanding the statement on academic honesty in the Student Handbook.

One of the most common forms of academic dishonesty is plagiarism, defined as the failure to cite properly the words **and/or the ideas** of another. Students are expected to adhere strictly to accepted academic standards of attribution in all of their work and should seek the guidance of their instructors if they have any questions in this regard.

Violation of university standards on academic honesty, including those on plagiarism, will be sufficient reason for an F in the course and may be reported to the Dean of Students. A second violation may be cause for suspension or expulsion from the university.

Attendance Regulations

Every student is expected to attend all regularly scheduled class sessions. Specific course attendance guidelines are established by the academic departments or each individual faculty member.

From time to time, it may become necessary for the university to compile attendance records for every course in order to meet the needs of regulatory agencies or accrediting bodies or for other purposes.

A maximum of two weeks of absences will be permitted for illness and emergencies. The instructor has the right to dismiss from the course any student who has been absent more than the maximum classes allowed. Please refer to the Student Handbook for further clarification of attendance requirements.

If a student is not properly registered with the uni-

versity (see Registration section elsewhere in this catalog), he/she is not permitted to attend classes regularly or be a part of the course.

Coursework Expectations

All full-time and part-time students are expected to spend at least two hours of time on academic studies outside of and in addition to each hour of class time. This expectation should be used by the student as a guide in determining how much time to spend on academic studies outside of class. It should also be used by the student, in consultation with the academic advisor, to help determine the student's course load each semester so that the course load matches the amount of time available for academic studies.

Make-up Policy

Make-up examinations are a privilege extended to students at the discretion of the instructor, who may grant make-up examinations to those students who miss an examination as the result of a medical problem or a personal emergency. On the other hand, the instructor may simply choose to adopt a "no make-up" policy. If an instructor does choose to offer a make-up test, there are two options: 1) to use university proctors, if available, in which case the student must pay a make-up exam fee for regular semester examinations and for final examinations; 2) to make private arrangements to offer the examination, in which case the make-up exam fee is charged at the instructor's discretion.

Graduation

Graduation Criteria

Matriculated students are required to submit a petition for graduation in the term immediately preceding their anticipated commencement. Graduation petitions must be signed by the chair of the student's academic department prior to submission of the petition and graduation fee at the Bursar's Office. Petition forms, graduation fees, and due dates are published by the Registrar each term.

Graduation is not automatic. Petitions, once filed, ensure that a student's record will be formally assessed in terms of degree requirements and that it will be submitted to the faculty for final approval. A petition may be denied if graduation requirements are not met. If a petition is approved, a degree will be awarded for the appropriate commencement. Only those students who have successfully completed the graduation requirements listed below can participate in the commencement ceremonies.

A degree will be conferred by the Board of Governors when a student has satisfied all program requirements and met all university requirements by having:

1. successfully petitioned and paid all graduation fees;
2. earned a cumulative quality point ratio of no less than 2.0 in all courses applicable toward the undergraduate degree;
3. earned a cumulative quality point ratio of no less than 2.0 (or higher if required by an individual department) in all courses in the student's major field of study;
4. passed the university's Writing Proficiency Examination;
5. been recommended by the faculty;
6. met all financial and other obligations and conformed to any local, state, or federal law concerning graduation;
7. met the residency requirement of the university.

If a student does not meet all the requirements as outlined above prior to the commencement date, the diploma for the specific commencement date will be destroyed. It is the student's responsibility to refile and make payment for a new petition for a future commencement date.

Residency Requirement

The residency requirement of the university is 30 credit hours taken at West Haven or at one of the university's off-campus centers. This requirement applies to all degrees, undergraduate and graduate. Transfer credit, coordinated courses, credit by examination, CLEP, DANTES, or proficiency examinations do not fulfill the residency requirement.

To ensure depth of study, the residency requirement must include 12 credit hours of work in the declared major for an associate's degree and 18 such credit hours for a bachelor's degree. Exceptions may be granted only by the dean administrating the major.

Writing Proficiency Examination

Because the University of New Haven believes that good writing skills are essential for success, it requires all its undergraduate students to demonstrate such skills before it will confer a bachelor's degree.

All students must pass the university's Writing Proficiency Examination as a requirement for graduation. No student will be eligible to receive the BA or BS degree without passing this examination. All students must take this examination during the first semester after the completion of 57 credit hours. Failure to take the examination may preclude continuous registration.

The examination will consist of the writing of an impromptu theme on one of several topics of current interest. If the student's syntax, punctuation, and diction are in accord with the conventions of standard English and if the argument or exposition is clear and coherent, the student will pass. If the student's writing is found to be deficient in these respects, notice of the unsatisfactory performance on the examination will be sent to the student and to the student's academic advisor.

Students who fail the examination must take it again each subsequent semester in which they are enrolled until the examination is passed. Those who fail are encouraged to utilize the services of the Center for Learning Resources or retake E 105 Composition to help them to improve their writing proficiency. Passing E 105 and/or utilizing the Center for Learning Resources does not satisfy the university writing proficiency requirement. In no case shall the requirements for a four-year degree be completed unless the Writing Proficiency Examination has been passed.

Honors

Academic honors are posted on the student's final transcript along with the name of the degree earned and the date the degree was conferred.

Honors are conferred upon candidates for graduation according to the following standards:

1. An associate's degree **With Honors** is awarded to students who have a quality point ratio of 3.25 for the credit hours specifically required for the degree program from which they are being graduated and who have taken 30 or more hours of required work at this university.
2. An associate's degree **With High Honors** is awarded to students who have a quality point ratio of 3.50 for the credit hours specifically required for the degree program from which they are being graduated and who have taken 30 or more hours of required work at this university.
3. The bachelor's degree **Cum Laude** is awarded to students graduating with a cumulative quality point ratio of at least 3.50 who have taken 60 or more credit hours of required work at UNH and completed all the suggested courses within their curriculum.
4. The bachelor's degree **Magna Cum Laude** is awarded to students graduating with a cumulative quality point ratio of at least 3.70, whose quality point ratio in all courses counting toward their major is at least 3.70, and who have taken 60 or more credit hours of required work at UNH and completed all the suggested courses within their curriculum.
5. The bachelor's degree **Summa Cum Laude** is awarded to students graduating with a cumulative quality point ratio of at least 3.90, whose quality point ratio in all courses counting toward their major is at least 3.90, and who have taken 60 or more credit hours of required work at UNH and completed all the suggested courses within their curriculum.

In determining eligibility for degrees with honors, transfer credit and credits earned by crediting examination will not be considered. Only the cumulative quality point ratio for courses completed at the University of New Haven is considered in determining a student's eligibility for honors.

TUITION, FEES, AND EXPENSES

The tuition and other expenses listed in this section reflect the charges for the 2006–07 academic year.

Full-time students taking courses offered during both the day and /or the evening will pay the full-time tuition rate for the first 17 credits per semester.

Any student who is registered as a full-time day division student on the first day of the semester will be responsible for payment of full-time day division tuition for the entire semester, regardless of any subsequent dropping of credits or withdrawal from a course. Full-time day division students who plan to enroll for fewer than 12 credits in any given term must change their enrollment status to part-time prior to the first day of the term.

Students enrolled as full-time day division students who take 18 or more credit hours in a single term will be charged additional tuition for each credit hour over 17, unless the additional credits are required for that semester on the student's major worksheet.

International Student Acceptance Fee

The international student fee is required of all international undergraduate and graduate students when they first enroll. It supports a variety of services and programs, cross-cultural workshops, community activities, international alumni programs, library subscriptions to international newspapers and magazines, and the International Services Office.

Engineering Tuition Differential

Courses with the designations CE, CEN, CH, CM, CS, EE, EAS, IE, or ME offered by the Tagliatela School of Engineering are charged an additional $80 per credit hour tuition differential.

Student Activity Fee

The student activity fee is distributed to various student groups by the Undergraduate Student Government Association. It covers the cost of student-supported services such as the newspaper and radio station and helps defray the expenses of clubs, organizations, social activities, etc.

Tuition and Fees 2006-2007

Undergraduate

	Per Occurrence	Per Term	Yearly Total
Pre-Enrollment Fees			
Paper Application Fee	$50	n/a	n/a
On-Line Application Fee	$25	n/a	n/a
Enrollment Fee — Commuter Students	$200	n/a	n/a
Enrollment Fee — Residential Students	$400	n/a	n/a
Acceptance Fee for New International Students	$225	n/a	n/a
Tuition: Full-time Day			
Tuition (12-17 Credit Hours)	n/a	$12,000	$24,000
Additional Charge for Credits Over 17 (Per Credit)	$800	n/a	n/a
Mandatory Activity Fee	n/a	$178	$356
Mandatory Health Services Fee — Domestic Students (Full-time, Full-year)	n/a	n/a	$215
Mandatory Health Services Fee — International Students (Full-time, Full-year)	n/a	n/a	$685
Mandatory Technology Fee	n/a	$37	$74

	Per Occurrence	Per Credit Hour	Yearly Total
Tuition: Part-time Day			
Part-time Tuition (1-11 Credits)	n/a	$800	n/a
Mandatory Activity Fee for 3-5 Credits	$18	n/a	$36
Mandatory Activity Fee for 6-8 Credits	$36	n/a	$72
Mandatory Activity Fee for 9-11 Credits	$54	n/a	$108
Mandatory Technology Fee	$37	n/a	$74
Tuition: Evening			
Part-time Tuition	n/a	$400	n/a
Mandatory Activity Fee (for Students in Modules A and C only)	$15	n/a	$30
Mandatory Technology Fee (non-Module)	$37	n/a	$74

	Per Occurrence	Per Credit Hour	Yearly Total
Summer I and Summer II (starting May 2007)			
Part-time Tuition	n/a	$400	n/a
Auditing			
Alumni	n/a	$70	n/a
Non-alumni	n/a	$120	n/a
Differentials			
Engineering Courses	n/a	$80	n/a
Computer Science Courses	n/a	$80	n/a
Chemistry Courses	n/a	$80	n/a

	Per Occurrence	Per Term	Yearly Total
Residential Life Charges			
Room – Double Occupancy	n/a	$3,085	$6,170
Room – Freshman Triple Occupancy	n/a	$2,585	$5,170
Room – New Residence Hall	n/a	$3,335	$6,670
Intersession (Per Week)	$160	n/a	n/a
Summer (Per Week)	$160	n/a	n/a
Housing Activity Fee	n/a	$50	$100
Room Selection Deposit for Returning Students	$200	n/a	$200
Damage Deposit*	$200	n/a	$200
Parking Fee (Residential Students Only)	$150	n/a	$150
Meal Plan A	n/a	$1,980	$3,960
Meal Plan B	n/a	$1,908	$3,816
Meal Plan C	n/a	$1,642	$3,284
Meal Plan D	n/a	$1,642	$3,284

**For residential students, $200 of the Enrollment Fee is applied to this deposit. Commuter students who become residential students must pay the deposit in full.*

	Per Occurrence	Per Credit Hour
Additional Fees		
Co-op Registration – Full-time	$150	n/a
Co-op Registration – Part-time	$75	n/a
Late Registration Fee	$25	n/a
Late Payment Fee	$50	n/a
Lab Fees	$32-677	n/a
Crediting Exams	n/a	$100
Graduation Fee	$110	n/a
Graduation Refilling	$50	n/a
Diploma Replacement Fee	$50	n/a
Transcript Fee (One free copy provided at Graduation)	$5	n/a

The university reserves the right to make, at any time, whatever changes it deems necessary in admission requirements, fees, charges, tuition, faculty, instructors, policies, regulations, and academic programs prior to the start of any class, term, semester, trimester, or session. The university reserves the right to divide, cancel, or reschedule classes or programs if enrollment or other factors so require. All such changes are effective at such times as the proper authorities determine and may apply not only to prospective students but also to those who are already enrolled in the university.

Payments

Tuition, fees, and other charges are payable no later than the university's posted due date. Checks or money orders should be made payable to the University of New Haven. There is a penalty charge of $20 per check for all checks returned by the payer's bank.

The university withholds all issuance of grades, awarding of diplomas, issuance of transcripts, and granting of honorable dismissal to any student whose account is in arrears.

The university offers a deferred payment option to help with education expenses. In partnership with Tuition Management Systems (TMS), the nation's top rated education payment plan provider, services provided include an interest-free monthly payment option that allows education expenses to be spread over ten monthly payments per year for an enrollment fee of $70.

The enrollment fee includes toll-free and Internet access to education payment counselors and account information. In addition, low-interest loan counseling and information are available for those students and families who need loan assistance or for persons who find the monthly payment amounts to be too large.

Information and enrollment forms for TMS are available by calling 1-800-722-4867, or online at www.afford.com.

Application for this plan must be made at least 10 days prior to the first day of each semester.

Tuition Refund Policy

After a formal withdrawal request is initiated by undergraduate students, tuition is refunded or canceled according to the following scale:

Date of Receipt of Withdrawal Request	Percentage Canceled
1st week of semester	80%
2nd week of semester	60%
3rd week of semester	40%
4th week of semester	20%
After the 4th week	0%

A prorated refund, rather than a refund based on the above-mentioned scale, may be made in situations involving clearly extenuating circumstances such as protracted illness of a student. All appeals based on such circumstances must be made in writing and include documentation of the extenuating circumstances. Appeals are to be sent to the Directors of Counseling and Health Services; prorated refunds will be determined by the Committee on Withdrawals. All requests for refunds should be initiated before the close of the semester of withdrawal. Any student under the age of 18 must have the written consent of a parent or guardian indicating to whom any refund, if applicable, is to be paid in order to withdraw from the university.

Summer Sessions and Intersession

In cases of withdrawal from a course or courses within the first week of each term, a refund of 50 percent of tuition is made. There is no refund of summer or intersession tuition after the first week.

The foregoing policy is intended to protect the university, which plans its expenses and bases its budget on full collection of tuition and fees from all registered students and assumes the obligation of supplying instruction and other services throughout the year.

Residence Hall Fee and Withdrawal Policies

1. A $400 nonrefundable enrollment fee is required of new students requesting on-campus housing. $200 of this fee is applied to their damage deposit. A $200 nonrefundable room selection fee, which is applied to the fall semester housing fees, is required of returning students.
2. Housing and meal plan fees are billed on a semester basis in June and December.
3. Each returning student is required to have on account a $200 damage deposit, which is billed with the student's initial university invoice containing charges for housing. Students are then responsible for maintaining their damage deposits at the $200 level while resident students. All new students will have a $200 damage deposit on account.
4. An activity fee of $50 is billed each semester.
5. All resident students are required to purchase a University Meal Plan.
6. **The housing agreement is binding for the 2006-07 academic year.**
   a. Students who cancel their housing agreement for the 2007 spring semester and remain enrolled as full-time students for the spring semester will be billed for the spring semester housing fees.
   b. Students who are leaving the University must withdraw from housing by January 8, 2007. **Failure to meet the withdrawal deadline of January 8, 2007 will result in a charge of $100, which will be deducted from the student's damage deposit.**

   Proper withdrawal includes:
   - Notifying the Office of Residential Life in writing that the student is leaving university housing,
   - Checking out with a Resident Director, and
   - Returning all keys to the Office of Residential Life.
7. Housing fees are non-refundable after August 28, 2006 and January 19, 2007.

FINANCIAL AID

Karen M. Flynn, BA, MA, Director

Christopher Maclean, BA, Associate Director

The University of New Haven offers a comprehensive financial aid program, with students receiving assistance in the form of grants, scholarships, student loans, and part-time employment. Funds are available from federal and state governments, private sponsors, and university resources. More than 70 percent of the university's full-time undergraduate students receive some form of financial assistance.

Most financial aid awards are based on an individual applicant's demonstration of need. Some funds are available on a merit basis for students who have exceptional academic records or athletic ability. Need-based awards are available only to U.S. citizens or eligible non-citizens.

Financial aid award decisions are made after careful consideration of a student's application for assistance. Eligibility for financial aid is based on financial need. Need is determined by subtracting the Expected Family Contribution (EFC), as determined by the federal "needs analysis" formula using the financial information provided on the Free Application for Federal Student Aid (FAFSA), from the Cost of Attendance. In calculating need, the Financial Aid Office attempts to consider all aspects of a student's financial circumstances and to meet the need of aid applicants through a "package" of assistance, generally including a combination of grants, loans, and employment.

Students interested in applying for financial aid are encouraged to do so as early as possible. New students must apply by March 1 for the fall semester and December 1 for the spring semester. Returning upperclass students must submit application materials no later than March 1. All students are encouraged to apply for aid as early as possible to ensure full consideration for available funds.

Applications completed after the deadline date will be considered on a rolling basis depending upon the availability of funds.

The following application materials must be completed and submitted by each financial aid applicant:

- **University of New Haven Financial Aid Application.** The application form must be completed fully and submitted to the Financial Aid Office.
- **Free Application for Federal Student Aid (FAFSA).** The FAFSA is required for application for financial aid from federal as well as state and institutional student financial aid programs. Students should list the University of New Haven on the form as one of the colleges authorized to receive this information. The UNH Title IV School Code is 001397. Approximately 4 weeks after the FAFSA is submitted to the Federal Student Aid Program you, will receive a Student Aid Report (SAR) directly from the U.S. Department of Education. Students may apply online at www.fafsa.ed.gov.
- **Tax Documentation.** Applicants must submit signed copies of both the student's and parent's complete federal income tax returns, with W-2 forms, from the most recent tax year prior to the academic year. Students filing as independents on the FAFSA are not required to submit their parent's tax documentation.
- **Verification.** Federal regulations require that our office verify the accuracy of the information provided on the FAFSA by an applicant for federal financial aid. This process is called verification.

Other forms and documents may be requested from applicants as their aid applications are reviewed. Upon completion of the review of an application, the Financial Aid Office will notify an applicant of his or her eligibility for financial aid if selected.

Financial Aid Refund Policy

When students are entitled to a refund as a result of withdrawal from courses, refunds of charges and financial aid will be based on the institutional refund policy, as described in the academic policies section of

the university catalog, and on the Return of Title IV Funds calculation, as required by Section 484B of the Higher Education Act. Federal regulations require that any unearned Title IV aid be returned to the program(s) that provided the funds.

Return of Title IV Funds

A withdrawal requires the university to calculate the amount of unearned aid a student has received. The university must:

-Determine the student's official withdrawal date as documented in the Registrar's Office. The withdrawal date is used to determine the percentage of the payment period completed and therefore the amount of aid a student earned. Students who have completed more than 60% of the term are not subject to the federal calculation.

-Determine the amount of aid earned by the student. The university must calculate earned aid by multiplying the total aid disbursed or which could have been disbursed (excluding Federal Work study) by the percent of the payment period the student completed.

-If less aid has been disbursed than a student has earned, then a post-withdrawal disbursement must be made. The university will notify the student or parent in writing within 30 days of the withdrawal date that a post-withdrawal disbursement is available. The student/parent must respond within 14 days of notification in order to receive the funds. The student/parent may accept all or part of the post-withdrawal disbursement.

If more aid was disbursed than earned, then the university, the student, or both must return all unearned aid in a specific order :

1) Unsubsidized Stafford Loans
2) Subsidized Stafford Loans
3) Federal Perkins Loans
4) Federal PLUS Loans
5) Federal Pell Grants
6) Federal SEOG
7) Other Title IV assistance for which return of funds is required

Students are responsible for repaying all unearned aid a school is not required to return, as well as any balance created on their Bursar account by the application of the Title IV return of funds formula. The university will notify the student in writing within 30 days of determining an overpayment. Students must repay as follows:

Loans: repayment according to terms of the loan
Grants: repayment is 50% of unearned grant.

Students who owe Title IV grant repayments have 45 days to:

Repay in full,
Make arrangements to repay the university,
Make arrangements to repay the U.S. Department of Education.

Students who fail to take action to repay will be reported to the Department of Education and National Student Loan Data System (NSLDS) immediately after the 45 day period has elapsed.

Additional information and examples of refund calculations are available from the Financial Aid Office.

Academic Requirements for the Retention of Financial Aid Eligibility

Students must be making satisfactory academic progress *and* be in good academic standing in order to be eligible to receive financial aid.

Students receiving financial aid as full-time undergraduates must successfully complete a minimum of 24 credits during the academic year in order to maintain satisfactory progress; full-time students who attend for only one semester during the academic year must complete a minimum of 12 credits. Satisfactory academic progress for part-time students is defined as successful completion of all the credits for which financial aid was awarded.

"Successful completion" is defined as the receipt of a passing letter grade (A+ to D-), and does not include the receipt of an F (Failure), I (Incomplete), DNA (Did Not Attend), or W (Withdrawal). The requirements for good academic standing are described in the "Academic Regulations" section of the catalog.

Major Aid Programs

Grants

Federal Pell Grants – The Pell Grant Program is a federal program providing grant assistance to low-income students. Grants for the 2005-06 academic year ranged from $200 to $4,050, with the student's eligibility being determined by the U.S. Department of Education.

Federal Supplemental Educational Opportunity Grants – (SEOG) is a federal program to provide grant assistance to exceptionally needy students. Students are selected by the university to receive the grants.

Connecticut Independent College Student Grant Program – Funds provided by the Connecticut General Assembly are awarded to needy Connecticut residents attending the university.

Capitol Scholarship Program – Connecticut students who have finished in the top 20 percent of their high school class or who have scored 1200 or higher on their combined Scholastic Aptitude Test (SAT) may be eligible for the Connecticut Scholastic Achievement Grant. Students must obtain an application from their high school guidance office.

University Grants-in-Aid – University grants are made in all divisions on the basis of need.

Presidential Scholarship – Incoming full-time freshman students who have a combined SAT score of 1200 or above will be considered for this award. Awards will be renewed for up to three additional years as long as the student maintains a B+ (3.3) cumulative average, remains a full-time student, and makes satisfactory academic progress. The deadline is May 1.

Academic Achievement Award – Incoming full-time freshmen with good academic records may qualify for an academic scholarship. Awards will be renewed for up to three additional years as long as the student maintains a B (3.0) cumulative average, remains a full-time student, and makes satisfactory academic progress.

Presidential Scholarship for Transfer Students – Incoming transfer students who have a minimum of 30 credits transferable to UNH or who hold an associate's degree may qualify for an academic scholarship. Students may receive the award for a maximum of seven semesters as long as they maintain a B+ cumulative average and remain full-time students. The deadline is May 1.

Departmental Scholarships – A limited number of awards are available from the individual schools at the university to incoming full-time freshmen.

Corporate Scholarship – Internship Program – A limited number of awards are available that provide a renewable scholarship as well as a paid summer internship at the specified corporation.

Athletic Grants-in-Aid – Athletic grants are provided to students for participation in sports. Selection for the awards is made by the athletic department based on students' athletic ability. Awards can range up to full tuition, room, and board. Athletic grants are available in the following sports:

Men	Women
Baseball	Basketball
Basketball	Cross Country
Cross Country	Indoor Track
Golf	Outdoor Track
Indoor Track	Lacrosse
Outdoor Track	Soccer
Soccer	Softball
Volleyball	Tennis
	Volleyball

Miscellaneous State Scholarships – Students from other states may be eligible to apply for state scholarships which can be brought to Connecticut for attendance at the University of New Haven. Students should contact their state scholarship agencies for information.

Donor Scholarships – Many scholarship awards are available each year through the generosity of businesses, charitable organizations, and friends of the university. Scholarship funds are awarded from annual

gifts from sponsors and from income from the university's endowments.

Loans

Federal Perkins Loan Program (formerly National Direct Student Loan Program) – Repayment on Perkins Loans begins six months after a recipient leaves school and carries a 5 percent rate of interest commencing with the start of repayment. Students are selected by the university to receive Perkins Loans.

Federal Stafford Student Loan (SSL) – The Stafford Student Loan is a federally subsidized loan program available on the basis of financial need to students enrolled at least half-time. The annual loan limits are as follows:

First year undergraduate	$2,625
Second year undergraduate	$3,500
Third year through completion	$5,500
Graduate students	$8,500

The interest rate is variable and is subsidized by the federal government while the student is enrolled on at least a half-time basis. Repayment begins six months after graduation or withdrawal from college. Entrance and exit interviews must be conducted in person with all borrowers. The entrance interview must be conducted prior to the student's receiving the first student loan check. Exit interviews must be conducted prior to a student's graduation or withdrawal. Applicants must submit a complete financial aid application.

Unsubsidized Federal Stafford Student Loan – The Unsubsidized Stafford Loan is similar to the SSL listed above except that it is not based on financial need and there is no in-school interest subsidy. Combined Subsidized and Unsubsidized loans cannot exceed the annual loan limits stated above.

Federal Parent Loans for Undergraduate Students (PLUS) – The PLUS Loan Program is a federal program in which parents of dependent students are permitted to apply for up to the cost of attendance minus any financial aid. The interest rate is variable. Information on this program is available from the Financial Aid Office.

Student Employment

Federal Work-Study Program (FWS) – This is a federal financial aid program which provides employment opportunities for needy students.

Alternative Financing Options

Tuition Management Services (TMS) – The TMS Plan offers a monthly system to pay for educational expenses through regularly scheduled payments over a ten-month contract. This plan carries an enrollment fee, but there are no interest or finance charges. Applications are available at the Financial Aid Office and the Bursar's Office. For further information, contact Tuition Management Services at 1-800-722-4867 or www.afford.com.

The following scholarships are awarded at the discretion of the university and, unless otherwise noted, require no special application form.

Alumni Association Scholarships – These merit-based awards support full-time day students with exemplary academic records.

Alvine Legacy Scholarship – Established to carry on the legacy of Carol Alvine by providing educational opportunities for students unable to afford higher education, this endowed fund provides an annual award to a worthy, needy student.

Amity Charitable Trust Fund – An annual award is given from the income of this fund to a worthy, needy student. Preference is given to students from the greater New Haven area. The fund was made possible through the generosity of the Amity Club.

John J. Armstrong Scholarship – This award was established by the Connecticut Department of Corrections in honor of UNH alumni John Armstrong's retirement and provides an annual scholarship with priority to family members of current, retired, or deceased employees of the Department of Corrections.

Edmund M. Autuori Scholarship – This is an endowed scholarship for accounting majors who demonstrate both financial need and scholastic ability.

The Barn Sale Scholarship – A scholarship is available each year for a deserving, upper-class disabled student. The award is made possible by an endowment established by the Barn Sale, Inc.

Angela Zappia & Philip Batchelor Scholarship – Angela Zappia and Philip Batchelor created this scholarship upon their graduation from the university's MBA Program for Executives. The annual award is made to an undergraduate or graduate student who is in good academic standing and has financial need, with preference to students enrolled in the School of Business.

Carmel Benevento Memorial Scholarship – This award is made annually to a woman entering the university as a freshman. The award was established in memory of Carmel Benevento and is based on need and academic and creative ability.

Roland & Margaret Bixler Scholarship – This endowed scholarship is awarded annually. The scholarship was established by Mr. Bixler, who is a member of the UNH Emeritus Board, and his wife, who is cofounder of Friends of the UNH Library.

Norman Botwinik Fund for Academic Excellence – This endowed scholarship is awarded annually to an undergraduate who over a period of four years has demonstrated marked academic achievement. Mr. Botwinik is the former Chairman of the UNH Board of Governors.

Bozzuto Charity Sports Classic Scholarship – Income from this endowment provides for an annual award to a needy student.

Clarice L. Buckman Scholarship Fund for Chemistry and Chemical Engineering – An annual award is given to a junior majoring in chemical engineering or chemistry in recognition of achievement and demonstration of incentive.

Coca-Cola Scholarship – Established by the Coca-Cola Foundation, an award is made annually to an incoming freshman who attended the Connecticut Pre-Engineering Program (CPEP) at any established Connecticut college or university for at least two years. The scholarship is renewable over a five-year period.

Connecticut Student Loan Foundation Scholarship – The Connecticut Student Loan Foundation provides an annual scholarship to a needy student.

C. Cowles & Co. Scholarship – This award is made annually to a Connecticut resident with financial need who aspires to a career in manufacturing.

Aldo DeDominicis Foundation – Scholarships are awarded annually to students majoring in the field of communications. Awards are based on financial need and academic achievement.

Dr. Lawrence and MaryLou DeNardis Scholarship – This award is made annually to a full-time undergraduate with financial need and academic achievement. The student selected may not be a recipient of the Presidential Scholarship.

William DeSenti Scholarship – An annual award is made to a needy student in the Tagliatela School of Engineering.

Robert B. Dodds Scholarship – This endowed scholarship is awarded annually to an engineering student. The fund was established by Mr. Dodds as his gift to the Fund for Engineering.

Clarence Dunham Scholarship – A merit-based award is made each year to a deserving student majoring in civil engineering. Selection is made by the Civil Engineering faculty.

Echlin Family Scholarships – Several annual awards of $2000 are made to needy business or engineering students. The awards are made possible through an endowment established through the generosity of John and Beryl Echlin.

Lynn Ellis Endowed Scholarship – Established in honor of Lynn Ellis, a former professor at the university, an award is made annually to a student in the School of Business with academic promise and financial need.

Ernst & Young Scholarship – An award is made each year from this endowment to a student majoring in accounting.

Murray and Shirley Gerber Scholarship – This award is made to students in the School of Business or Engineering based on their entrepreneurship and leadership abilities.

James Jacob Gerowin Memorial Scholarship – An award is made to a needy engineering student showing academic promise. The award is in memory of James Gerowin of the Class of 1985.

Anthony Giusto Scholarship – This award, given annually to a Connecticut resident studying criminal justice, is based on academic merit and financial need.

Dr. John D. Hatfield Memorial Scholarship – An annual award is made in memory of Dr. John D. Hatfield, who served as Executive Vice President and Provost at UNH. The scholarship supports an undergraduate or graduate student with financial need and good academic standing, with preference to recipients who demonstrate care and concern by helping others bring out the best in themselves.

William Randolph Hearst Scholarship – This endowed scholarship is made possible through the generosity of the William Randolph Hearst Foundation. It is awarded annually to first-generation and minority students.

David Hennessey Memorial Scholarship – David Hennessey was a highly respected member of the university community, having received two master's degrees from UNH, as well as serving as Director of Human Resources and adjunct faculty. This memorial scholarship will make an annual award to an undergraduate or graduate student in good academic standing and financial need with preference to those residing in the Lower Naugatuck Valley region, including Seymour, Ansonia, and Derby, and who are enrolled in the university's Industrial/Organizational Psychology or Communication programs.

Hershey-Frey Scholarship – This endowed scholarship is available to students residing in the Naugatuck Valley. The award is funded through the generosity of the Paul H. Hershey Foundation and Mildred and John Frey.

Paul Kane Memorial Scholarship – An award is available each year to an active scholar-athlete, with preference given to a Hamden, Connecticut, resident. The award is made in memory of Paul Kane, a university alumnus who was killed in the service of his country.

Nathanial Kaplan Memorial Scholarship – An award in memory of Nathanial Kaplan, a former English professor, is made each year to a student who has been enrolled in the College of Arts and Sciences for at least two years. Student must demonstrate financial need.

An FuWang Lee Scholarship – This endowed fund was established by Dr. Henry Lee in memory of his mother and her heartfelt interest in providing opportunities to students unable to afford tuition on their own. An annual scholarship is awarded to needy students who are of Chinese ancestry and/or are pursuing a degree in the Henry Lee College of Public Safety.

Peggy Leuzzi Memorial Scholarship – An annual award is made in memory of Mrs. Leuzzi, a former employee of the university. The scholarship is made possible through the generosity of Joseph Macionus.

Martin Luther King, Jr., Memorial Scholarship – An annual award in honor of Dr. King is made to a deserving, needy student. Preference is given to minority students.

Ahmed Mandour Memorial Scholarship – An award is available each year to a junior or senior student majoring in economics enrolled as a part-time/evening student. The award is made in memory of Dr. Mandour, a former dean at the university.

Arnold Markle Scholarship – An annual award is made to a criminal justice major in memory of Arnold Markle, former State's Attorney for the Judicial District of New Haven.

Ellis C. Maxcy Scholarship – This scholarship was established in memory of UNH founder and former President and Chairman of the Board Ellis C. Maxcy, in recognition of the seminal role he played in the development of the university. The award is presented annually to a "nontraditional" undergraduate or graduate student who comes to UNH from the workplace

and demonstrates high achievement, exemplary character, and leadership within his or her community.

Edward J. McCormack Memorial Scholarship – The intent of this memorial scholarship is to reflect the interest and life of Edward J. McCormack by making an annual award to a student majoring in sports management. The scholarship is renewable based on the recipient maintaining good academic standing.

James R. McCormack Memorial Scholarship – Established by Nancy and Kevin McCormack in memory of their son James, a student in the Fire Science program at the university, this full-tuition scholarship is awarded annually to a student enrolled in the Fire Science Program who demonstrates financial need. Applications for this scholarship are available in the Financial Aid Office.

William J. and Virginia S. McCurdy Scholarship – This endowed scholarship is supported through the McCurdy Family Charitable Trust and is awarded annually to a student with demonstrated financial need.

Arthur Moulton Memorial Scholarship – Established by Evelyn and David Moulton in honor of Arthur Moulton, former president of the George Ellis Company, this full-tuition scholarship is awarded to a student in the School of Engineering who demonstrates excellent academic promise and financial need. Applications for this scholarship are available in the Financial Aid Office.

Joseph O'Dowd Memorial Scholarship – This scholarship is granted to a student in the department of Fire Science who best exemplifies the personal qualities of Fire Specialist Joseph O'Dowd and who has completed his or her freshman year with a 3.0 GPA or higher.

Parents Association Scholarship – This is an endowed scholarship funded by the UNH Parents Association.

Virginia M. Parker Scholarship – Each year Chi Kappa Rho sorority makes an award from this endowed scholarship to an undergraduate woman.

H. Pearce Family and Friends Scholarship – This endowed scholarship was made possible through the Pearce Family, longtime friends and supporters of the university. It is awarded to a resident of the state of Connecticut who demonstrates financial need and academic ability.

Marvin K. Peterson – Evening Student Council Scholarship – This scholarship was established in 1969 by the Evening Student Council of the University of New Haven to honor past President Marvin K. Peterson (1953-1973). The scholarship, awarded to undergraduate part-time/evening students, is entirely funded by the Evening Student Council.

Reid Achievement Scholarship – Distinguished UNH alumni and Board of Governors member Laura Reid established this scholarship to provide tuition support to students with demonstrated financial need, academic promise, and/or achievement in a club, sport, or activity.

Rosazza Scholarship – This fund was established in memory of Eugene Rosazza, an alumnus of the university, and is made annually to a needy student with an exemplary academic record.

New Haven Wives of Rotarians – An annual award from this endowment is made to a female student from the Greater New Haven area on the basis of academic achievement and financial need.

Douglas D. Schumann Scholarship – This endowed scholarship is awarded annually, on the basis of personal and academic integrity, to an engineering student who has completed his/her freshman year.

Donald R. Scott Scholarship – This scholarship is in memory of Donald R. Scott, former Chief of Campus Police at UNH, and is awarded jointly by the University of New Haven and the West Haven Black Coalition.

William A. Simons Scholarship – This scholarship fund, created by William A. Simons, an alumni of the university's MBA program, makes an annual award to an undergraduate or graduate student in good academic

standing and in financial need, with preference to students enrolled in the School of Engineering, particularly those intending to major in chemical engineering.

Louis and Mary Tagliatela Endowed Scholarship – This award is made annually to a junior or senior majoring in a field related to either the construction or the hotel industry and demonstrating financial need and academic merit.

Unilever Scholarships – Annual awards are made to minority engineering students with financial need.

Dany J. Washington Scholarship – This scholarship is in memory of Dany Washington, former Dean of Continuing Education at UNH, and is awarded to nontraditional adult students based on scholarship and leadership displayed in the university or community environment.

Robert Wilson Scholarship – Awarded annually to a freshman and renewable for up to three years, providing a 3.0 GPA is maintained, this award is based on the following criteria: an African-American from New Haven County demonstrating financial need and high achievement in academics and other activities.

Mrs. Yeh Ko Hsien-Tao Scholarship – Created by Dr. Poe-Len Ye in memory of his mother, this scholarship supports students from Taiwan and the People's Republic of China, as well as students of Chinese/Asian ancestry, who are majoring in criminal justice or forensic science and demonstrate academic achievement and financial need.

Rubin W. Vine Veterans Scholarship – UNH Board member and World War II veteran Rubin Vine established this award to provide scholarships to veterans and/or family members of veterans in financial need.

UHY Scholarship – This award is made to accounting majors with high grade point averages and demonstrated financial need. The scholarship was made possible through the generosity of the Simione, Scillia, Larrow & Dowling Charitable Foundation.

Dorothy S. Weiss Scholarship – This scholarship, established by UNH alumni Frank Warner in honor of his friend Dororhy Weiss, is awarded annually to a student who is in good academic standing and demonstrates financial need.

World Journal Scholarship – This scholarship was established in 2001 by Howard Lee, President of the World Journal, and the Henry C. Lee Institute of Forensic Science in honor of the victims whose lives were sacrificed on September 11, 2001. An award is made annually to an undergraduate or graduate student attending the university's Henry Lee College of Public Safety, with priority to family members of police officers or firefighters who sacrificed their lives or were injured during the September 11, 2001 attacks, and secondary preference to family members of any victim who perished in the attacks.

Dr. Frank R. Yulo Memorial Scholarship – This fund was created by Lori A. and Robert F. Polito Jr., EMBA '98, in memory of Robert's uncle, Dr. Frank R. Yulo, a distinguished state educator. Recognizing Dr. Yulo's commitment to educational opportunities for all, this scholarship is awarded to a minority or student of color who is majoring in education and has demonstrated financial need.

COLLEGE OF ARTS AND SCIENCES

Dr. Ronald H. Nowaczyk, PhD, Dean
Robert Greenberg, PhD, Associate Dean
Gordon R. Simerson, PhD, Associate Dean

The College of Arts and Sciences prepares students for a future of lifelong learning. Through its varied academic disciplines, the College provides the foundation for success as a global citizen. Through its degree programs, the College prepares students for meaningful careers or for continued study in graduate or professional schools. The College offers the Bachelor of Arts, the Bachelor of Sciences, a number of Associate's degrees and undergraduate certificates. The College's graduate programs lead to the Master of Arts and Master of Sciences degrees, as well as to a number of graduate certificates. The College also complements programs in other Schools at UNH and offers many of the essential courses in the University's Core Curriculum. Those undecided about a major will find a welcoming home in the General Studies program that allows ample flexibility to sample courses from a variety of disciplines.

The dynamic nature of the world today requires students to be open-minded, critical thinkers who can approach society's issues and problems from a variety of perspectives. Your education in the College of Arts and Sciences is designed to provide that background. We offer you the opportunity to study and learn historical, cultural, social, individual, and political perspectives on your world. Our goal is to challenge you to take advantage of the many resources and talents within the College to help you prepare for your future.

The professors in the College of Arts and Sciences are committed to the student learning experience. The commitment goes beyond classroom instruction to include student opportunities to work with faculty on their scholarship and research and to apply knowledge and skills in the community working on real-life projects. We also encourage students to expand their knowledge and understanding of the world to a global level. Graduates of the College of Arts and Sciences will be prepared to make an impact in tomorrow's world.

The College of Arts and Sciences also offers a host of extracurricular activities to supplement the learning experience. These events include campus-wide debates, symposia, and faculty forums. The College adds to New Haven's vibrant cultural environment. It supports the UNH Theater through its student productions. The Seton Gallery is a well-established university art gallery featuring, in addition to a permanent collection, a wide variety of work by students, renowned artists, and sculptors at shows throughout the academic year.

For students, staff and faculty, the College has developed *Arts@Noon* events that feature UNH talent in poetry, theatre, music, dance, and film. Through *Arts@Night*, the College presents entertainment events on campus for UNH and public attendance, with performances in various musical styles, comedy, and dance.

Programs and Concentrations

Undergraduate Programs

Bachelor of Arts

Art
Chemistry
Communication
English
  Literature
  Writing
Global Studies
Graphic Design
History
Interior Design
  Prearchitecture
Liberal Studies
Mathematics
Music
Music Industry
Music and Sound Recording
Political Science
Psychology
  Community/Clinical
  General Psychology

Bachelor of Science

Biology
  Premedical/Predental/Preveterinary Medical Biology
  Biochemistry
  General Biology
Biotechnology
Dental Hygiene
Environmental Science
Marine Biology
Mathematics
  Computer Science
  Applied Mathematics
  Statistics
Music and Sound Recording
Nutrition and Dietetics

Associate in Science

Dental Hygiene
General Studies
Graphic Design
Interior Design

Graduate Programs

Master of Arts

Community Psychology
Industrial/Organizational Psychology

Master of Science

Cellular and Molecular Biology
Education
Environmental Science
Human Nutrition

Graduate Certificates

Applications of Psychology
Geographical Information Systems
International Relations
Legal Studies
Mental Retardation Services
Psychology of Conflict Management

Teaching as a Career

Students interested in earning a teaching certificate to qualify to teach at the elementary or secondary level may do so by entering the graduate program in education at UNH. An accelerated entry process enables students in any undergraduate major to complete both the BA and an MS in Education in five years.

Minors

It is highly recommended that students working toward a degree in one area of study give serious thought to organizing their elective courses so as to receive a minor in a second discipline. A minor usually consists of 18 credit hours devoted to the study of either a group of courses on related subjects or a series of courses offered by one department.

Students interested in studying for a minor should consult with the chair of the department offering the minor. The minors are listed below:

Art

Bioengineering

Biology

Black Studies

Chemistry
Communication
English
Environmental Science
History
Mathematics
Multimedia
Music
Nutrition
Philosophy
Political Science
Psychology
Sociology
Theatre Arts

Certificates

Students can take their first step toward an undergraduate degree by registering for one of the certificates offered by the College of Arts and Sciences. Each certificate is carefully designed as a concentrated introduction to a particular subject area and generally consists of courses totaling 15 to 18 credit hours. Later, students may choose to apply the certificate credits they have earned toward their undergraduate degree at the university.

Certificates

Journalism
Public Policy

University Core Curriculum

In addition to departmental requirements, students must fulfill all requirements of the core curriculum.

General Policies in the College of Arts and Sciences:

- Each student will be assigned an academic advisor. Normally, the advisor is a member of the faculty in the major department for the student's degree program.
- A student may select a minor in a department other than the major department after consultation with the advisor or the appropriate department chair.
- To receive a degree from the College of Arts and Sciences, the student must be awarded his/her last 30 credits by the University of New Haven.
- A minimum of 120 semester hours is required for graduation.

Coordinated Course Policy:

To implement the university's Coordinated Course Policy, the College of Arts and Sciences has adopted the following additional guidelines:

1. A student may take a maximum of two Arts and Sciences courses on a coordinated basis. The courses must be either (a) upper-division courses: that is, equivalent to 300- or 400-level courses at UNH or (b) courses required by the student's major program: that is, not Arts and Sciences elective courses.
2. Coordinated courses from two-year colleges will be accepted only for students who have freshman or sophomore status at UNH. A student who has completed a total of 57 credit hours cannot obtain consent for a coordinated course taken at a two-year college.
3. Any exceptions to the previously stated guidelines must be approved by the dean of the College of Arts and Sciences.
4. Students should note that in all cases they must seek approval before taking a coordinated course.

BA, Liberal Studies

The BA in liberal studies serves students whose needs are addressed by an interdisciplinary program of study. The flexible nature of this program permits students to integrate courses from across the university for the achievement of personalized educational goals. Those goals may be directed toward the realization of specific career objectives not met by other programs.

All students earning a bachelor's degree in liberal studies must complete the university's core curriculum requirements as part of the 120-122 credits required for the degree.

Students will also select a minimum of eight courses from two of the focus areas listed below, for a minimum of 48 credits. Students should choose a minimum of three and a maximum of six courses from any one of the disciplines within each of the four focus areas, which will ensure a breadth of study within this program. Students must choose at least ten focus area courses from the 300 level or above that they have not taken to satisfy core curriculum requirements.

Focus Areas

Focus Area 1: Humanities

Disciplines: Communication, English, Modern Languages, History, Philosophy

Focus Area 2: Mathematics and the Natural Sciences

Disciplines: General Biology, Chemistry, Environmental Science, Marine Biology, Mathematics, Physics

Focus Area 3: Social/Behavioral Sciences

Disciplines: Economics, Political Science, Psychology, Sociology, Legal Studies

Focus Area 4: Visual and Performing Arts

Disciplines: Art, Graphic Design, Interior Design, Music, Theater

In consultation with the Arts and Sciences advisor, students will develop a personal plan of study. This plan will include an elective sequence of credits to support the student's academic/professional goals. Students may choose their elective sequence from the areas of arts and sciences, business, engineering, or public safety/professional studies.

AS, General Studies

The College of Arts and Sciences offers the AS in general studies to serve two different student populations. The first is the new or returning student who wishes a general liberal arts education for personal enrichment. The second is one who is undecided about career objectives and wishes to defer the choice of a major field.

Nearly half of the 61 credit hours required for the degree are free electives. This flexibility permits the student to take courses in a number of different fields prior to choosing a major. By judicious choice of electives, it is possible to transfer into majors in any of the schools in the university.

Students planning to transfer to four-year programs in the College of Arts and Sciences should note additional core requirements in science and mathematics, English literature, art, and social science, as well as special requirements in particular major programs.

Required Courses

Students must complete 61 credit hours of courses to earn the associate's degree with a general studies major, including the courses listed below:

E	105	Composition (cc)
E	110	Composition and Literature (cc)
HS	102	The Western World in Modern Times (cc)

Plus 1 mathematics course: M 109
or M 127
or higher (cc)
1 literature or philosophy course* (cc)
1 art or music or theatre course* (cc)
1 computer course* (cc)
1 science course with laboratory* (cc)

4 social science courses: EC 133, P 111, PS 121, and SO 113 (cc)

cc—Course which satisfies the University Core Curriculum requirements

*—*Courses chosen from the University Core Curriculum listing*

Art

See VISUAL AND PERFORMING ARTS > Visual Arts.

Biology and Environmental Science

Chair: Michael J. Rossi, PhD

Professors Emeriti: Burton C. Staugaard, PhD, University of Connecticut; H. Fessenden Wright, PhD, Cornell University

Professors: R. Laurence Davis, PhD, University of Rochester; Charles L. Vigue, PhD, North Carolina State University; Henry E. Voegeli, PhD, University of Rhode Island; Roman N. Zajac, PhD, University of Connecticut

Associate Professors: Michael J. Rossi, PhD, University of Kentucky

Assistant Professors: Carmela Cuomo, PhD, Yale University; Eva Sapi, PhD, Eotvos Lorand University

Instructor: James Ayers, MS, Purdue University

Practitioners-in-Residence: Norman Abell, DPM, Ohio College of Podiatric Medicine; David DePodesta, MBA, Quinnipiac University; Anthony Melillo, MS, University of New Haven

The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the department chair.

Biology

Biology provides one of the cornerstones of a liberal education by increasing knowledge and appreciation of oneself and of other living organisms in the ecosphere. It is an active and exciting field leading to careers in drug discovery, medicine, and education. As a major, biology prepares the student for professional or graduate training or for technical and research positions in one of the health or life science fields.

BS, Biology

Students earning a BS with a major in biology must complete 122-124 credit hours. Courses include the university's core requirements and the course requirements for the particular biology concentration as indicated below.

Concentration in Premedical/Predental/ Preveterinary Medical Biology

This concentration gives the student the basic entrance requirements of virtually every U.S. college of medicine, dentistry, and veterinary medicine. Entrance into these colleges is highly competitive, and completion of the concentration does not guarantee acceptance into a medical, dental, or veterinary medical college. Graduates have gone on to pursue medical, dental, and veterinary medical degrees at such schools as Georgetown University, Tufts University, the University of Connecticut, Ohio State University, and the University of Tennessee. Students who complete the program but decide not to pursue a medical career are highly qualified to enter the workforce in one of the technically oriented research, health, or related life science fields. In addition to the university's core requirements and seven free electives, the following courses are required:

BI	253-254	Biology for Science Majors with Laboratory I and II
BI	301	Microbiology with Laboratory
BI	308	Cell Biology with Laboratory
BI	311	Molecular Biology with Laboratory
BI	461	Biochemistry with Laboratory
BI	493	Evaluation of Scientific Literature
CH	115-116	General Chemistry I and II
CH	117-118	General Chemistry I and II Laboratory
CH	201-202	Organic Chemistry I and II
CH	203-204	Organic Chemistry I and II Laboratory
CH	211	Quantitative Analysis with Laboratory
HU	300	Nature of Science
M	117	Calculus I
M	228	Elementary Statistics
PH	103-104	General Physics I and II with Laboratory

Plus three of the following:

BI	303	Cells and Tissues with Laboratory
BI	304	Immunology with Laboratory
BI	305	Developmental Biology with Laboratory
BI	309-310	Vertebrate Anatomy and Physiology with Laboratory I and II
CH	221	Instrumental Methods of Analysis with Laboratory

Concentration in Biochemistry

This concentration is most appropriate for students interested in a career in the rapidly growing fields of biotechnology and biomedical/pharmaceutical research or in pursuing an advanced degree in biochemistry or molecular biology. The program offers extensive hands-on experience in biochemical, cellular, and molecular techniques. Recent graduates are employed at Bristol-Myers Squibb, Protein Sciences, Bayer Corporation, Pfizer, U.S. Surgical, Neurogen Corporation, Cytotherapeutics, Curagen, and Yale University School of Medicine. In addition to the university's core requirements and seven free electives, the following courses are required:

BI	253-254	Biology for Science Majors with Laboratory I and II
BI	301	Microbiology with Laboratory
BI	304	Immunology with Laboratory
BI	308	Cell Biology with Laboratory
BI	311	Molecular Biology with Laboratory
BI	461	Biochemistry with Laboratory
BI	493	Evaluation of Scientific Literature
BI	501	Protein Biochemistry and Enzymology
BI	502	Biochemistry of Bioenergetics
BI	503	Nucleic Acid Biochemistry
CH	115-116	General Chemistry I and II
CH	117-118	General Chemistry I and II Laboratory
CH	201-202	Organic Chemistry I and II
CH	203-204	Organic Chemistry I and II Laboratory
CH	221	Instrumental Methods of Analysis with Laboratory
HU	300	Nature of Science
M	117	Calculus I
M	228	Elementary Statistics
PH	103-104	General Physics I and II with Laboratory

Concentration in General Biology

This concentration gives the student a general overview of the biological sciences. It is appropriate for the student with a broad interest in biology. In addition to the university's core requirements and six free electives, the following courses are required:

BI	253-254	Biology for Science Majors with Laboratory I and II
BI	301	Microbiology with Laboratory
BI	308	Cell Biology with Laboratory
BI	311	Molecular Biology with Laboratory
BI	461	Biochemistry with Laboratory
BI	493	Evaluation of Scientific Literature
CH	115-116	General Chemistry I and II
CH	117-118	General Chemistry I and II Laboratory
CH	201-202	Organic Chemistry I and II
CH	203-204	Organic Chemistry I and II Laboratory
HU	300	Nature of Science
M	117	Calculus I
M	228	Elementary Statistics
PH	103-104	General Physics I and II with Laboratory

Plus four of the following:

BI	259-260	Vertebrate Anatomy and Physiology with Laboratory I and II
BI	303	Cells and Tissues with Laboratory
BI	304	Immunology with Laboratory
BI	305	Developmental Biology with Laboratory
BI	320	Ecology with Laboratory
BI	510	Environmental Health
CH	221	Instrumental Methods of Analysis with Laboratory
EN	500	Environmental Geoscience

BS, Biotechnology

The bachelor of science in biotechnology program

is designed to prepare students to enter the growing biopharmaceutical and biotechnical fields. The program integrates courses in biochemistry, genetics, and cellular and molecular biology.

All students earning a BS with a major in biotechnology must complete 128 credit hours. Courses include the core requirements of the university, the required courses listed below, and elective courses.

Required Courses

BI	253-254	Biology for Science Majors with Laboratory I and II
BI	301	Microbiology with Laboratory
BI	303	Cells and Tissues with Laboratory
BI	304	Immunology with Laboratory
BI	308	Cell Biology with Laboratory
BI	311	Molecular Biology with Laboratory
BI	461	Biochemistry with Laboratory
BI	493	Evaluation of Scientific Literature
BI	511	Molecular Biology of Proteins with Laboratory
BI	513	Molecular Biology of Nucleic Acid with Laboratory
BI	520	Bioinformatics
CH	115-116	General Chemistry I and II
CH	117-118	General Chemistry Laboratory I and II
CH	201-202	Organic Chemistry I and II
CH	203-204	Organic Chemistry Laboratory I and II
CH	221	Instrumental Methods of Analysis with Laboratory
HU	300	Nature of Science
M	117	Calculus I
M	228	Elementary Statistics
PH	103-104	General Physics I and II with Laboratory

Environmental Science

Environmental scientists are employed by municipal, state, and federal agencies and by consulting companies and businesses both large and small. They work on such problems as wetland mapping and protection; watershed management; ground and surface water contamination; aquifer delineation and protection; marine resource management; crop and pest management; natural hazards; regulatory compliance; environmental health and safety; water, wastewater, and air treatment; and pollution prevention and remediation.

Usually, specialized training is necessary if one wishes to hold an administrative job at a high salary level. Our programs are designed to enable students to enter a graduate or specialty school to continue their education. Examples of advanced study include a graduate program in environmental science or engineering; a school of forestry, planning, or public health; a program in urban ecology or environmental geology; or even, with proper selection of electives, business or law school.

The BS degree program establishes a solid background in the biological and earth sciences, chemistry, physics, and mathematics in the first three years. In the fourth year students concentrate on advanced environmental science courses.

A combined five-year BS/MS program in environmental science is offered to students who have completed approximately 75 credit hours (five semesters) of undergraduate work, have at least a 3.0 grade point average, and are recommended by the department.

BS, Environmental Science

Required Courses

All students earning a bachelor's degree in environmental science must complete the core requirements of the university and the courses listed below:

EN	101	Introduction to Environmental Science
EN	102	Environmental Science Laboratory
EN	500	Environmental Geoscience
EN	502	Environmental Effects of Pollutant
BI	253-254	Biology for Science Majors I and II with Laboratory
BI	320	Ecology with Laboratory
BI	510	Environmental Health
CH	115-116	General Chemistry I and II
CH	117-118	General Chemistry Laboratory I and II
CH	211	Quantitative Analysis with Laboratory
HU	300	Nature of Science
PH	103-104	General Physics I and II with Laboratory
M	228	Elementary Statistics

Plus 21 to 28 credit hours of biology, science, or chemistry electives

CH	201-202	Organic Chemistry I and II
		and
CH	203-204	Organic Chemistry Laboratory I and II
M	109	Intermediate Algebra
		and
M	115	Pre-Calculus
		or
M	115	Pre-Calculus
		and
M	117	Calculus I
		or
M	117-118	Calculus I and II

Plus four electives

BS, Marine Biology

This program is designed to prepare students to enter the rapidly expanding fields of resource management, environmental assessment and protection, biotechnology, and education related to estuarine, coastal, and marine environments. The level of experience required for an individual to contribute in these fields is not adequately satisfied by an undergraduate degree in biology or environmental science; therefore, individuals with specific, advanced, and focused training are needed. This program, with a strong basic emphasis on the biological and chemical sciences, will prepare students for these fields.

Required Courses

All students majoring in marine biology must complete the core requirements of the university and the following courses:

MR	101	Introduction to Marine Biology
MR	102	Seminar in Marine Biology
MR	200	Fundamentals of Oceanography
MR	260	Marine Vertebrate Zoology with Laboratory
MR	300	Marine Ecology with Laboratory
MR	310	Marine Botany with Laboratory
MR	320	Marine Pollution
MR	501-502	Senior Project in Marine Biology I & II
BI	250	Invertebrate Zoology with Laboratory
BI	253-254	Biology for Science Majors with Laboratory I and II
BI	301	Microbiology with Laboratory
BI	320	Ecology with Laboratory
CH	115-116	General Chemistry I and II
CH	117-118	General Chemistry Laboratory I and II
CH	201-202	Organic Chemistry I and II
CH	203-204	Organic Chemistry Laboratory I and II
HS	102	Modern Western World
HS	108	History of Science
		or
HU	300	Nature of Science
M	115	Pre-Calculus
M	117	Calculus I
M	228	Elementary Statistics
PH	103-104	General Physics I and II with Laboratory

Plus two of the following restricted electives:

CH	221	Instrumental Methods with Lab
EN	533	Special Topics in Field Geology
EN	540	Introduction to Geographical Information Systems
MR	330	Coastal Resources & Management
MR	331	Marine Conservation & Restoration
MR	410	Marine Aquaculture & Biotechnology
MR	420	Marine Biogeochemistry with Lab

Plus one of the following:

BI	306	Genetics
BI	308	Cell Biology with Laboratory
BI	311	Molecular Biology with Laboratory
BI	461	Biochemistry with Laboratory

Minor in Environmental Science

The minor in environmental science provides a useful background for students majoring in other areas who have concern for the environment. For example, students majoring in political science might well combine their program with a minor in environmental science. Another useful combination is an environmental science minor and a major in business administration or engineering.

For specific information concerning a minor in environmental science, please consult with the program coordinator.

Minor in Biology

To minor in biology, students must complete the courses listed below. In some instances, an upper-level biology course can be substituted for general biology.

BI	121-122	General and Human Biology with Laboratory I and II
		and
BI	253-254	Biology for Science Majors with Laboratory I and II
BI	261	Introduction to Biochemistry
		or
BI	461	Biochemistry with Laboratory
BI	301	Microbiology with Laboratory
BI	308	Cell Biology with Laboratory
BI	311	Molecular Biology with Laboratory

Minor in Bioengineering

No rigid group of courses constitutes a minor in bioengineering. Students wishing to follow such a program should major in one aspect of engineering and take a minor (20 credit hours) in biology, or the biology major program may be combined with a minor or concentration in engineering. Students should consult with the particular engineering and biology department chairs before starting the program.

Teaching Biology

Students interested in earning a teaching certificate in secondary education in biology may enter the graduate program at UNH. The BS in biology with a concentration in General Biology is the best choice for a major for those planning to teach at the secondary level, but other related majors are also acceptable. Please contact the Education Department for additional information.

Biotechnology

See Biology and Environmental Science.

Chemistry

The department of chemistry and chemical engineering resides in the Tagliatela School of Engineering but offers the BA in chemistry degree program through the College of Arts and Sciences. Please see the departmental listing in the Tagliatela School of Engineering section of the catalog for additional information, including a list of faculty members and details on other degree programs offered by the department.

BA, Chemistry

This program is designed to provide a traditional liberal arts background with the basic requirements of a chemistry major.

Required Courses

All students in the BA in chemistry program must complete 125 credit hours. Courses must include the university core requirements and the following:

CH	115-116	General Chemistry I and II
CH	117-118	General Chemistry I and II with Laboratory
CH	201-202	Organic Chemistry I and II
CH	203-204	Organic Chemistry I and II Laboratory
CH	211	Quantitative Analysis with Laboratory
CH	221	Instrumental Methods of Analysis with Laboratory
CH	331-332	Physical Chemistry I and II
CH	333-334	Physical Chemistry I and II Laboratory
CH	341	Synthetic Methods in Chemistry
CH	411	Chemical Literature
CH	412	Seminar
CH	501	Advanced Organic Chemistry
CH	521	Advanced Inorganic Chemistry
EC	133	Principles of Economics
M	117-118	Calculus I and II
M	203	Calculus III
PH	150	Mechanics, Heat, and Waves with Laboratory
PH	205	Electromagnetism and Optics with Laboratory

Plus 30 credit hours of electives

BS, Chemistry

Minor in Chemistry

These programs appear in this catalog under the Tagliatela School of Engineering.

Teaching Chemistry

Students interested in earning a teaching certificate in secondary education in chemistry may enter the graduate program at UNH. The BA or BS in chemistry is the best choice for a major for those planning to teach at the secondary level, but other related majors are also acceptable. Please contact the Education Department for additional information.

Communication

The department of communication resides in the School of Business. The BA in communication and the journalism certificate are offered through the College of Arts and Sciences. Please see the departmental listing in the School of Business section of the catalog for additional information, including a list of faculty members and details on other degree programs offered by the department.

The communication program at the university allows each student to develop interpersonal and mass communication competencies, skills, and awareness through a sequence of course offerings.

Internships are available in a number of regional businesses and nonprofit organizations and in both print and broadcast media.

More information about the bachelor's degree programs in communication is provided under the School of Business section in this catalog. Also included are course listings and information concerning communication as a minor field of study.

The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the department chair.

BA, Communication

The University of New Haven offers a BA and a BS in communication.

The bachelor of arts degree program has a strong journalism and public relations concentration. In addition, interpersonal communication theory is emphasized, giving the student a broad background in all the elements of the communication field.

Required Courses

All students in the BA in communication program must complete 121 credit hours. Courses must include the university core requirements and the following:

CO	100	Human Communication
CO	101	Fundamentals of Mass Communication
CO	102	Writing for the Media
CO	114	Production Fundamentals
CO	205	Intercultural Communication
CO	212	Television Production I
CO	214	Elements of Film
CO	300	Persuasive Communication
CO	301	Communication Theory and Research
CO	302	Social Impact of Media
CO	306	Public Relations Systems and Practices
CO	308	Broadcast Journalism
CO	309	Public Relations Writing
CO	420	Communication and the Law
CO	500	Seminar in Communication Studies
J	201	News Writing and Reporting
J	311	Copy Desk

Plus three communication electives

Plus one history elective

Plus eight electives

BS, Communication

The university also offers a BS in communication through the School of Business.

Communication Certificates

The communication department offers certificates in journalism and mass communication. Students may choose to take these courses on a matriculated or nonmatriculated basis. For those who choose the nonmatriculated option, it is not necessary to apply to a degree program at the university. However, the credits earned may be applied toward the requirements for a degree program at a later date.

Journalism Certificate

The program is designed to provide basic journalism skills in both print and broadcast media. This certificate may supplement students' experience or prepare them for other areas in their current field of work. All students are required to take 15 credit hours, including the following:

Required Courses

CO	102	Writing for the Media
CO	309	Public Relations Writing
J	201	News Writing and Reporting

Plus two courses from among the following:

CO	302	Social Impact of Media
CO	308	Broadcast Journalism
J	202	Advanced News Writing and Reporting
J	311	Copy Desk
J	351	Journalistic Performance
J	367	Interpretive and Editorial Writing

Mass Communication Certificate

For information on the mass communication certificate, see the School of Business section of the catalog.

Dental Hygiene

See DIVISION OF HEALTH PROFESSIONS.

Economics

The department of economics resides in the School of Business. Please see the departmental listing in the School of Business section of the catalog for information, including a list of faculty members and details on degree programs offered by the department.

Minor in Economics

A total of 18 credit hours of work in economics is required for the minor in economics.

Recommended Courses

EC	133-134	Principles of Economics I and II
EC	340	Microeconomic Analysis
EC	341	Macroeconomic Analysis

Plus 9 credits of advanced economics courses

Education

Chair: Jacqueline Jacoby, EdD, Boston College

Professors: Louise M. Soares, PhD, University of Illinois; Shirley Wakin, PhD, University of Massachusetts

Assistant Professors: Paulette L. Pepin, PhD, Fordham University; Judy Randi, EdD, Teachers College of Columbia University

Instructor: Susanne Murphy, MS, Southern Connecticut State University

Lecturer: John Ciochine, MA, Fairfield University

Practitioner-In-Residence: Victoria Volonino, MEd, University of Missouri

The University of New Haven does not offer an undergraduate degree in the subject of education. The Education Department offers two programs of graduate study: Teacher Certification, for those seeking initial teacher certification, and Professional Education, for currently certified teachers seeking professional advancement. Both programs lead to the Master of Science in Education degree. These programs represent the university's commitment to the preparation of future educators for meaningful roles in teaching the youth of the twenty-first century. The Education Department prepares future elementary and secondary school teachers; secondary school subject areas include mathematics, science, business education, history, and English.

All students who are interested in pursuing a teach-

ing career should contact the Education Department as soon as possible during their undergraduate career. University of New Haven undergraduates who want to pursue a career in teaching may be eligible for early admission to the UNH Education Department's graduate program through the **Bachelor's Plus Program**. This process allows qualified undergraduates to begin their education coursework as undergraduates, enabling them to earn a bachelor's degree, a master's degree, *and* Connecticut certification in just *five years*. Students in this program develop a modified major worksheet; for example, a Bachelor of Arts in "Mathematics – Pre-Education."

Students in the Bachelor's Plus Program take their first Education course during their junior year. This course, ED 350 Introduction to Education, provides students with an overview of the field of education. (All credit requirements for financial aid and undergraduate status must be maintained while pursuing the Bachelor's Plus Program.) In their senior year and into the summer, undergraduates continue to take foundation education courses. Students then begin an internship in a public school, with the public school providing payment for tuition. Students attend classes in the evening. Our program's field component places students in a local school to work with schoolchildren under the direction of a classroom teacher. This experience gives our students the opportunity to observe professional teachers in their own classrooms, gaining valuable hands-on experience in an urban and a suburban school district, linking practice and theory. UNH's Education Department is currently placing interns in 36 Connecticut public schools. During the internship students experience thirteen weeks of student teaching; students are responsible for the cost of student teaching.

By the end of June, students complete the program and receive a master's degree, one year after graduating with a bachelor's degree. The master's degree is tuition-free with participation in the public school internship program. Successful completion of all requirements will result in UNH's recommendation to the State Department of Education for Connecticut certification. Students are able to apply for fall teaching positions in Connecticut public schools.

Entrance Requirements

- Students are required to have and maintain a 3.0 GPA.
- Students must develop a modified major worksheet by their sophomore year. For example, a mathematics major would develop a worksheet for the "BA in Mathematics – Pre-Education." Formal admission into the program occurs between junior and senior year.
- Successful completion of Praxis I – or a total of 1100 on the SATs for a waiver. Secondary students may be required to pass Praxis II (content exam) by senior year.
- Passing grade on the UNH Writing Proficiency Exam by the end of junior year.
- Successful completion of ED 350 Introduction to Education.
- Approval/recommendation from both major and education advisors.
- Completion of formal application for graduate school and satisfaction of all graduate school requirements. All fees waived.

English

Chair: Donald M. Smith, PhD

Director of Freshman English: Richard J. Farrell, MPhil

Professors Emeriti: Paul Marx, PhD, New York University; Douglas Robillard, PhD, Wayne State University

Professors: Srilekha Bell, PhD, University of Wisconsin; Robert D. Greenberg, PhD, Yale University; David E.E. Sloane, PhD, Duke University; Donald M. Smith, PhD, New York University; Brenda R. Williams, PhD, Washington University

Instructor: Stephen A. Listro, MS, Southern Connecticut State University, MFA, University of Miami

Senior Lecturers: Wesley J. Davis, MA, Southern Connecticut State University; Richard J. Farrell,

MA, University of Virginia, MPhil, Yale University

Lecturers: Marianna M. Vieira, MS, University of Bridgeport, MA, State University of New York at Albany

An English major may choose the concentration in either literature or writing. Students in the literature concentration develop their analytic skills and critical ability by reading widely varied works in the English language: William Shakespeare to Walt Whitman, Jane Austen to Gwendolyn Brooks. The study of English and American literature provides a depth and breadth of liberal education as it also improves one's thinking, writing, and speaking. A major in literature is looked upon very favorably by admissions officers of law, medical, and dental schools. It is good preparation for graduate work in such fields as business, education, urban planning, social work, and public health. Employers in many areas of business, industry, and government seek college graduates with broad knowledge and the ability to communicate effectively.

In the writing concentration, students practice a variety of written language from the expository essay to business and technological applications to more creative forms. Some specific areas in which writing skills have immediate practical worth are journalism, advertising, public relations, sales training, and promotion. Many companies hire writers and editors for company periodicals and reports, equipment handbooks, and service manuals. Publishing houses provide employment, of many kinds and on many levels, for persons skilled in writing. For writers of proven ability, there are numerous opportunities to freelance for trade journals, newspapers, magazines, and other publications. An English major may also prepare for teacher certification at the elementary or secondary level.

Modern Language Study

While study of a modern language is not required, it is strongly recommended that the student who majors in English know at least one modern language. Knowledge of a modern language makes one more sensitive to the use and meaning of words in one's own language. Furthermore, knowledge of a modern language widens one's perspective and deepens one's understanding through the insights gained into another culture. Students who are considering graduate study certainly should be competent in at least one modern language.

The Literary Club

The English Department sponsors the university's Literary Club, which is open to all UNH students. Its aim is to further interest in the literary arts. The club's primary activity is publishing *The Elm City Review,* a journal of students' art and writing.

Transfer Credit for Writing Courses

The English Department automatically will award credit for freshman writing courses taken at an accredited American college or university if the courses are essentially the same as E 105 or E 110 and if the student received at least a "C." If the courses were taken at a foreign college, the student will have to demonstrate his or her proficiency in writing before credit will be awarded. In the latter case, the student should make an appointment with the secretary of the English department for the writing of a one-hour composition.

The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the Co-op coordinator for the College of Arts and Sciences.

BA, English

Thirty credit hours in English beyond the freshman level, with the restrictions indicated below, are required for a major in English. All English majors must take the university core curriculum and the following courses:

E	211	Early British Writers
E	213	Early American Writers
HS	101	Foundations of the Western World
HS	353	Modern Britain

Plus 17 free electives

Concentration in Literature

The literature concentration requires eight additional literature courses, at least one from Category I and at least two from each of the other three categories of upper-level English courses:

Category I	Category II	Category III	Category IV
E 201	E 202	E 217	E 214
E 290	E 212	E 281	E 218
E 323	E 353	E 392	E 260
E 341	E 356	E 395	E 275
E 371	E 390	E 477	E 394
	E 406-409		E 478

Concentration in Writing

The writing concentration requires two additional literature courses, each from a different category of the above list, and six of the following writing courses:

E	220	Writing for Business and Industry — now online
E	225	Technical Writing and Presentation
E	251	Narrative Nonfiction
E	267	Creative Writing I
E	268	Creative Writing II
E	270	Advanced Essay Workshop
E	480	Internship

Teaching Language Arts

Students interested in earning a teaching certificate for secondary education in language arts may enter the graduate program at UNH. The BA in English is the best choice for a major, but other majors are also acceptable. Please contact the Education Department for additional information.

Minor in English

18 credit hours in literature and/or writing courses, selected by the student in consultation with the department advisor, are required for the minor.

Minor in Black Studies

The minor in Black Studies is an interdisciplinary program offered in the College of Arts and Sciences and housed in the Department of English. The minor consists of courses in English, history, political science, sociology, and world music. A student may minor in this program by completing 18 credit hours of courses selected from the following:

E	217	African-American Literature I
E	218	African-American Literature II
HS	120	History of Blacks in the United States
MU	112	Introduction to World Music
MU	550	Studies in Urban Ethnic Music
PS	205	The Politics of the Black Movement in America
SO	221	Cultural Anthropology
SO	315	Social Change
SO	400	Minority Group Relations

Environmental Science

See Biology and Environmental Science.

Division of Global Studies, History, and Political Science

Courses in Global Studies, History, Political Science, Philosophy, and Sociology offer students an understanding of the social, political, and cultural forces that have shaped the contemporary world. Increasingly, citizens of a global society need to gain expertise in the rich array of courses offered in this division, from an understanding of international relations and the analysis of historical events, to the discussion of the role of women in modern society.

The Division offers the BA in Global Studies (tentative), History, and Political Science, and minors in History, Political Science, Philosophy, and Sociology. These units also contribute many of the courses to the major in Global Studies, reflecting the university's commitment to develop interdisciplinary opportunities within the social sciences.

Global Studies

Interim Director: Bradley Woodworth, PhD, Indiana University

The BA in Global Studies is an innovative interdisciplinary major designed to serve students who seek to understand global issues that increasingly affect all aspects of our lives. These issues include international terrorism and crime networks, global stresses on the environment, transnational economic issues, and the effectiveness of diplomacy in responding to global crises and opportunities. The program permits students to integrate courses from across the university with real-life learning experiences (internships and study abroad) in order to achieve global competency. Students in this major will be prepared to enter career opportunities in government, nongovernmental organizations, or multinational companies.

BA, Global Studies

All students earning a bachelor's degree in Global Studies must complete the university's core curriculum requirements as part of the 121 credits required for the degree. Additional requirements are:

- GLS 100, Introduction to Global Studies (3 credits) during the first semester in the major.
- A minimum of two semesters (6 credits) of a modern language to be taken by the end of the sophomore year. Students concentrating in Area Studies as described below should take a language relevant to their specific region of specialization.
- Global foundation courses: students will select 5 courses with a minimum of two courses from each of the following groups:

Group 1: Cultural Studies

E	202	Modern World Literature
HS	207	History since 1945
MU	112	World Music
SO	221	Cultural Anthropology
TA	166/7	Touristic Geography

Group 2: International Relations and Organizations

CO	205	Intercultural Communication
PS	222	U.S. Foreign Policy
PS	241	International Relations
PS	243	International Law and Organization
PS	355	Terrorism
CJ	340	Comparative Criminal Justice
EC	200	Global Economy

- Global Studies Concentrations: Upon completion of the first year of study in the major, students will choose a Global Studies concentration and will take 8 additional courses from among the following concentration courses. A minimum of 5 of these courses should be specific to the student's chosen concentration. The concentrations offered are Global Economy, Latin American Studies, Asian Studies, and European Studies. Concentration courses include:

Global Economy

Note: Most of these courses and EC 200 from the foundation courses can be taken only upon completion of EC 133 and EC 134.

EC	342	International Economics
EC	440	Economic Development
IB	413	International Marketing
IB	421	Operation of a Multinational Corporation
IB	422	International Business Negotiations
IB	424	Asian Business Environments
MK	326	E-commerce
MK	442	Marketing Research in a Global Economy

Latin American Studies:

E	409	Latin American Literature
HS	350	Latin American History
MU	300	Studies in Music: Music of Latin America
PS	283	Politics of Latin America

Asian Studies:

HS	260	Modern Asia
HS	262	Modern Chinese History
HS	264	Modern Japanese History
IB	424	Asian Business Environments
PS	281	Comparative Political Systems: Asia

European Studies:

E	406-408	International Literature
HS	345	Europe in the Nineteenth Century
HS	351	Russian and the Soviet Union
HS	353	Modern Britain
HS	355	Modern Germany
HS	446	Europe in the Twentieth Century
MU	201-202	Analysis and History of European Art Music
PS	282	Comparative Political Systems: Europe

- **Internship and Study Abroad:** in consultation with the Global Studies advisor, students will complete a minimum of 3 credits earned through an internship. All students in this program will be encouraged strongly to study abroad for a semester or summer term.
- Ten 300-level or 400-level courses must be completed.

History

Professors: Joseph B. Chepaitis, PhD, Georgetown University; Robert Glen, PhD, University of California, Berkeley; Thomas Katsaros, PhD, New York University

Associate Professor: Edmund N. Todd, PhD, University of Pennsylvania

History provides a framework for a liberal education. The study of human experience–failures as well as achievements–is the core of historical study. It gives insight into related disciplines in the humanities and social sciences and broadens the perspective of students in professional fields of business and engineering by revealing the complexity and interrelatedness of human experience.

History is also excellent preparation for a variety of careers in business, government, law, journalism, foreign service, and many other areas. Because of the great variety of professional programs at the University of New Haven, the student interested in history can combine this interest with highly technical professional training.

The department strives to meet its objectives by teaching not only content but critical and writing skills through reading, class presentations and discussion, research, and writing. Historical methodology is stressed in all advanced courses, and students take the history seminar in their senior year to sharpen their critical and analytic skills.

Phi Alpha Theta

The University of New Haven has a chapter of the international honor society in history, Phi Alpha Theta, which is open to those students who have had 12 hours of history or more and have maintained an average of better than 3.0 in history courses and better than 2.9 overall. The university chapter of Phi Alpha Theta provides students and faculty with a social and intellectual experience beyond classroom work, offering films, speakers, and roundtable discussions. Students not eligible for membership in the society are welcome to participate in all of the chapter's activities.

BA, History

All students in the BA in history program must complete 122 credit hours. These courses must include the university core requirements and 36 credit hours of history courses, including those listed below. The balance of the program can be arranged in consultation with an advisor.

Required Courses

HS	101	Foundations of the Western World
HS	102	The Western World in Modern Times
Plus either HS 211 United States History to 1865 and HS 212 United States History Since 1865		
		or
HS	110	American History Since 1607 and any other United States history course excluding HS 211/212
HS	260	Modern Asia
HS	491	Senior Seminar

Plus one upper-division Asian history elective, two upper-division courses in European history, and one upper-division course in American history

Plus two electives in history

Minor in History

A total of 18 credit hours in history is required for a minor in history. These courses must include the two courses listed below and may include any other combination of four courses in history that supports the student's interests and needs.

Required Courses

HS 101 Foundations of the Western World

HS 102 The Western World in Modern Times

Modern Languages

Professor: Robert Greenberg, PhD, Yale University

Practitioner-in-Residence: Chien Wen Yu, MBA, Wake Forest University

In an interconnected world, the knowledge of modern languages has become increasingly important and greatly enhances global awareness. The Division regularly offers courses in beginning Chinese, Russian, and Spanish. Courses in other major world languages may also be offered on a less regular basis. These courses fulfill the Foreign Language elective slot on many worksheets. In addition, students interested in Study Abroad are encouraged to begin their study of a modern language at UNH.

The Division offers the following courses:

CN	101	Conversational Chinese I
CN	102	Conversational Chinese II
CN	201	Chinese Language and Culture
CN	204	Chinese Language and Literature
CN	450	Special Topics in Chinese
FR	101	Elementary French I
FR	102	Elementary French II
RU	101	Elementary Russian I
RU	102	Elementary Russian II
RU	201	Intermediate Russian I
RU	202	Intermediate Russian II
SP	101	Elementary Spanish I
SP	102	Elementary Spanish II
SP	201	Intermediate Spanish I
SP	202	Intermediate Spanish II

Philosophy

Chair: Joel H. Marks, PhD

Professor: Joel H. Marks, PhD, University of Connecticut

Practitioner-in Residence: David Brubaker, PhD, University of Illinois

The main attraction of philosophy always has been and always will be the intrinsic fascination of thinking about the "perennial questions." Is there purpose in the universe or only random causation? Does human existence have meaning, or is it absurd? Are moral obligations real, or are they just social constructs? Is the mind anything more than the functioning of the brain? Are we capable of acting freely, or do we behave as nature dictates? Is reason the slave of the passions? Is it better to be Socrates dissatisfied than a fool satisfied?

But studying in this field also helps a person to develop skills that have wide practical application. Philosophy students practice logical thinking, analytical reading and listening, and precise writing and speaking. They also practice "thinking outside the box" and, hence, cultivate creativity, even humor, because their occupation is none other than the questioning of fundamental assumptions in all areas. Thus, philosophy has served as a useful background for people who have gone on to successful careers in diverse professions, such as computer systems programming, music, management, insurance, investment, marketing, film-making, publishing, real estate, technical writing, literary writing, government, human services, journalism, law, medicine, teaching, research... and stand-up comedy!

Philosophy courses at UNH examine the major world traditions of thought from ancient times to the present. Emphasis is placed on ethical inquiry, including the application of ethical thinking to our daily and professional lives.

Minor in Philosophy

A student in this program must complete 15 credit hours, as follows:

Required Courses

PL 210 Logic

PL 222 Ethics

Plus at least three additional philosophy courses chosen in consultation with a philosophy advisor

Political Science

Professors: Lawrence J. DeNardis, PhD, New York University; Caroline A. Dinegar, PhD, Columbia University; James W. Dull, PhD, Columbia University; Natalie J. Ferringer, PhD, University of Virginia; Joshua H. Sandman, PhD, New York University

A major in political science provides the student with a foundation for a career in government on the local, state, national, and international levels; for a career in law; for graduate school programs in political science, international relations, and public policy; and for careers in the areas of campaign management, communication, public relations, and business. All political science and prelaw majors or minors should discuss career goals and educational objectives with a department advisor within one month of entrance into the program.

Further, advice on the Law School Admissions Test (LSAT) and the Graduate Record Examination (GRE) preparation courses, which our prelaw and graduate school-oriented students are urged to take, is available through the department.

Prelaw majors and minors in the department of political science have been especially successful in gaining entrance to law schools throughout the country.

The political science faculty grants the Rollin G. Osterweis Award for Excellence in Political Science to an outstanding political science student.

BA, Political Science

All students in the BA in political science program must complete 121 credit hours. These courses must include the university core requirements and 48 credit hours of political science courses, including those listed below:

Required Courses

PS 121 American Government and Politics
PS 122 State and Local Government and Politics
PS 241 International Relations
PS 243 International Law and Organization

Plus one of of the following:

PS 281, 282, 283, 285 Comparative Political Systems (Asia, Europe, Latin America, Middle East)

Plus one of the following:

PS 304, 308, 309 Political Parties, Legislative Process, The American Presidency
PS 332 Constitutional Law
PS 461 Political Theory: Ancient and Medieval
PS 462 Political Theory: Modern and Contemporary
PS 499 Senior Seminar I

Plus 18-21 hours of political science electives to be chosen with the student's departmental advisor

Minor in Political Science

The Department of Political Science offers several course clusters for students from other disciplines who wish to enhance their degree programs. The minor consists of 18 credit hours of political science courses, chosen with a departmental advisor. Several three-course clusters are suggested below for inclusion in the minor to address particular interests. In each case, nine additional credit hours are to be chosen in consultation with a departmental advisor.

American Government

PS 121 American Government and Politics
PS 122 State and Local Government and Politics
PS 332 Constitutional Law

International Relations

PS 241 International Relations
PS 243 International Law and Organization
PS 281-285 Comparative Political Systems (at least one)

Legal Studies

PS	230	Anglo-American Jurisprudence
PS	231	Judicial Behavior
PS	332	Constitutional Law

General Political Science

Students whose needs are best served by a mixture of political science courses may construct an individualized minor, in consultation with a departmental advisor, or a certification in campaign management.

One additional minor cluster is offered through the Institute of Law and Public Affairs as follows:

Certification in Public Policy (Campaign Management)

A certificate in public policy is issued to students who complete 18 credit hours of courses in areas of public affairs designed to serve the student's intellectual and professional needs. An example is the program in campaign management.

Required Courses

PS	121	American Government and Politics

Plus five of the following:

PS	224	Public Attitudes and Public Policy
PS	340	Campaign Management: Procedures and Operations
PS	341	Campaign Management: Structure and Organization
PS	344	Campaign Management: Survey Research, Polling, Computers
PS	346	Campaign Management: Financing and Election Laws
PS	450	Campaign Management: Internship

Additional related elective courses may be selected with the approval of a departmental advisor.

Sociology

Coordinator: Alfred Bradshaw, PhD

Associate Professor: Alfred Bradshaw, PhD, Syracuse University

Sociology is the study of social life and the social causes and consequences of human behavior. Sociology's subject matter ranges from analysis of families, corporations, cities, and sports to that of sexuality, death, race, gender, and ethnicity as well as the impact of demographic and environmental policies and other social phenomena. The sociological perspective is empirically grounded and sufficiently broad to be relevant to those considering careers in related fields such as research, governmental service, social work, personnel management, advertising, law, medicine, journalism, social gerontology, and hospitality and tourism.

The University of New Haven does not currently offer a major in sociology. For those students wishing to satisfy core or elective requirements, or for students who may wish to select sociology or social welfare as a minor, a selection of courses is offered.

Minor in Sociology

A minimum of 18 semester hours is required for the minor in sociology. To complete the minor, six courses are required. Three of the courses are specified. They are:

Required Courses

SO	113	Sociology

One of the following:

SO	250	Research Methods
CJ	250	Scientific Methods in Criminal Justice
P	305	Experimental Methods in Psychology

One of the following:

P	301	Statistics for Behavioral Sciences
M	228	Elementary Statistics
CJ	251	Quantitative Applications in Criminal Justice

The remaining three courses must be sociology electives that meet with the approval of the Sociology chairperson.

Global Studies

See DIVISION OF GLOBAL STUDIES, HISTORY, AND POLITICAL SCIENCE.

Graphic Design

See VISUAL AND PERFORMING ARTS > Visual Arts.

Division of Health Professions

Chair: Rosa A. Mo, EdD

The Division of Health Professions of the College of Arts and Sciences is the home of science-based professional training programs in health care. Combining a strong foundation in biological science with practical real life learning and field experience, programs are offered in dental hygiene and in nutrition and dietetics. The Division also offers a graduate degree in Human Nutrition, described in the Graduate Catalog.

Dental Hygiene

Director: Sandra D'Amato-Palumbo, MPS

Assistant Professors: Sandra D'Amato-Palumbo, MPS, Quinnipiac College; Gwen Grosso, MS, University of Bridgeport; Mark Kacerik, MS, University of Bridgeport; Teal Mercer, MPH, University of Connecticut; Renee Prajer, MS, University of Bridgeport

The cornerstone of the UNH dental hygiene program is the bachelor of science degree. This program enables the student to be involved in dental hygiene coursework throughout all four years of the curriculum. The course of study integrates science prerequisites and general (core) education requirements with foundational and advanced-level dental hygiene courses. Graduates of the bachelor of science program will be prepared not only to seek employment in private dental offices but also to pursue employment in a variety of other health care settings such as dental hygiene and dental business/industry, nursing homes, centers for the developmentally disabled, hospitals, home health care agencies, correctional facilities, and community health centers. Bachelor of science degree students also have the knowledge and skills necessary to pursue education at the graduate level.

Students who wish to exit the program at the end of three years of study may earn an associate in science degree in dental hygiene. This program prepares graduates for necessary board examinations and employment primarily in the dental office setting. The associate's degree program integrates science prerequisite courses and foundational dental hygiene courses into a three-year curriculum. Graduates of the program are positioned to practice as dental hygienists and, if desired, complete the bachelor's degree by participating in one additional year of study.

In addition to the programs described above, UNH offers a dental hygiene degree completion program. This curriculum is designed for practicing dental hygienists who are graduates of associate degree programs. The degree completion program is designed to enable dental hygienists to transfer credits from an accredited dental hygiene program and utilize their academic and work experience as the basis for completing coursework leading to the bachelor of science degree.

Admission Requirements

In addition to the general admission requirements for all prospective UNH students, it is recommended that applicants to the dental hygiene program demonstrate satisfactory performance in the sciences and mathematics. It is strongly recommended that applicants have completed both high school biology and chemistry with laboratory and two years of college preparatory mathematics. An in-person or telephone interview with the department director or a faculty member is recommended; letters of recommendation supporting the student's ability to pursue a rigorous science-based curriculum and desire to contribute in the health care delivery system are strongly encouraged. Admission to the program is limited, and part-time study is available only during the first year of the curriculum. All students enrolled in the dental hygiene clinical course sequence must be full-time.

Professional Accreditation and Licensure

The program in dental hygiene is accredited by the Commission on Dental Accreditation of the American Dental Association, a specialized accrediting body recognized by the Commission on Recognition of Postsecondary Accreditation and by the United States Department of Education.

Students in the program are provided with application materials for the Dental Hygiene National Board Examination (written) and the Northeast Regional Board Examination (NERB/clinical). Both the

National Board Examination and a clinical examination are required for program graduates to apply for dental hygiene licensure in Connecticut and most other states.

BS, Dental Hygiene

Students earning a bachelor of science degree in dental hygiene must complete 126-128 credit hours. Courses must include the university's core requirements for bachelor degree students and the required courses listed below. Once students are enrolled in the dental hygiene clinical course sequence (DH 220, 240, 330, 350, 460), they must be enrolled in a full-time course of study.

Required Courses

CH	105	Introduction to General and Organic Chemistry with Laboratory
CS	107	Computers and their Applications
DH	105-110	Introduction to Dental Hygiene I and II
E	105	Composition
E	110	Composition and Literature
HS	102	The Western World in Modern Times
M	109	Intermediate Algebra
		or
M	127	Finite Math
P	111	Introduction to Psychology
SO	113	Sociology
BI	121	General and Human Biology with Laboratory I
DI	215	Principles of Nutrition
DH	214	Oral Facial Structures
DH	215	Radiology
DH	220	Dental Hygiene Concepts I
E	230	Public Speaking and Group Discussion
		or
CO	100	Human Communication
DH	240	Dental Hygiene Concepts II
BI	259/260	Vertebrate Anatomy and Physiology I and II with Laboratory
BI	261	Introduction to Biochemistry
BI	301	Microbiology with Laboratory
PA	308	Health Care Delivery Systems
DH	320	Pharmacology and Pain Management
DH	325	General and Oral Pathology
DH	327	Periodontology
DH	330	Dental Hygiene Concepts III
DH	342	Dental Materials
DH	350	Dental Hygiene Concepts IV
DH	423	Instructional Planning and Media
DH	438	Dental Hygiene Research
DH	455	Dental Hygiene Public Health
DH	460	Advanced Dental Hygiene Practice
DH	461	Oral Medicine
DH	462	Dental Hygiene Internship
DH	468	Dental Hygiene Senior Project

Plus one philosophy or literature elective; one art, music, or theatre elective; and one scientific methods elective

Plus two three-credit electives

AS, Dental Hygiene

Students earning an associate in science degree in dental hygiene must complete 96-98 credit hours. Courses must include the university's core requirements for associate's degree students and the required courses listed below. Students enrolled in the dental hygiene clinical course sequence (DH 220, 240, 330, 350, 460), must be enrolled in a full-time course of study. Those students earning an associate's degree must enroll in the clinical course during the designated summer session.

Required Courses

DH	105-110	Introduction to Dental Hygiene I and II
CH	105	Introduction to General and Organic Chemistry with Laboratory
CS	107	Computers and their Applications
E	105	Composition
E	110	Composition and Literature
HS	102	The Western World in Modern Times
M	109	Intermediate Algebra
		or
M	127	Finite Math
P	111	Introduction to Psychology
SO	113	Sociology
BI	121	General and Human Biology with Laboratory I

DI	215	Principles of Nutrition
DH	214	Oral Facial Structures
DH	215	Radiology
DH	220	Dental Hygiene Concepts I
E	230	Public Speaking and Group Discussion
		or
CO	100	Human Communication
DH	240	Dental Hygiene Concepts II
BI	259/260	Vertebrate Anatomy and Physiology I and II with Laboratory
BI	261	Introduction to Biochemistry
BI	301	Microbiology with Laboratory
DH	320	Pharmacology and Pain Management
DH	325	General and Oral Pathology
DH	327	Periodontology
DH	330	Dental Hygiene Concepts III
DH	342	Dental Materials
DH	350	Dental Hygiene Concepts IV
DH	455	Dental Hygiene Public Health
DH	460	Advanced Dental Hygiene Practice

Plus one art, music, or theatre elective

Nutrition and Dietetics

Program Director: Georgia Chavent, Assistant Professor, MS, Columbia University, RD, Medical College of Virginia

BS, Nutrition and Dietetics

Nutrition and dietetics professionals are well equipped to enter the health and wellness field. Managing the delivery of food and providing healthy eating guidance to health professionals, athletes, private practice clients, chefs, food service managers, food scientists, and consumers of all ages is the essence of the dietetics field and offers exciting challenges for students to prepare themselves for varied and exciting career opportunities.

The Nutrition and Dietetics Program is included within the newly created Division of Health Professions and is designed for students seeking a career as a nutritionist or registered dietitian (RD). The program includes management, food, and clinical coursework that is granted approval status by the Didactic Program in Dietetics (DPD), and by the Commission on Accreditation for Dietetics Education (CADE) of the American Dietetic Association, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995, (312) 899-5400. Students earning credits toward a dietetics degree may apply for Associate Membership in the American Dietetic Association.

The RD registered dietitian credential is recognized nationally, enabling graduates to practice the art and science of the nutrition care process throughout the United States. Graduates are providing food and nutrition services in private practices settings, health care institutions such as teaching hospitals and extended-care facilities, community nutrition sites, child care centers, school lunch programs, corporate food companies, physicians' offices, and specialized programs for eating behavior and weight management.

Students who have earned a bachelor's or graduate degree in another discipline may apply credits toward a nutrition and dietetics degree or be eligible to receive a Verification Statement as a nonmatriculated student authorizing their entry into a supervised practice program once they have completed the required dietetics courses. A minimum of six to eight Didactic Program courses must be taken at the University of New Haven.

The undergraduate Nutrition and Dietetics Program is also associated with the Master of Science Program in Human Nutrition, enabling qualified students to complete graduate study concurrently with the undergraduate program.

Required Courses

A minimum total of 123 credit hours, including the university core curriculum, must be completed for the bachelor of science degree in nutrition and dietetics. These specialty courses are included:

A	101	Introduction to Financial Accounting
BI	121	General and Human Biology with Laboratory I
BI	259-260	Vertebrate Anatomy and Physiology with Laboratory I and II
BI	261	Introduction to Biochemistry
BI	301	Microbiology with Laboratory
CH	105	Introduction to General and Organic Chemistry with Laboratory
CO	100	Human Communication
DI	150	Sports Nutrition (optional)

DI	200	Food Science and Preparation with Laboratory
DI	214	Menu Planning
DI	215	Principles of Nutrition
DI	216	Food Safety, Sanitation, and Procurement
DI	222	Careers in Health and Wellness
DI	315	Nutrition and Disease
DI	326	Principles of Dietetics Management
DI	330	Dietetic Practice in Today's Society
DI	342	Healthy Food Preparation
DI	350	Nutrition Throughout the Lifecycle
DI	405	Community and Institutional Nutrition
DI	450-455	Special Topics
DI	597	Dietetic Practicum (optional)
E	220	Writing for Business and Industry
		or
E	230	Public Speaking and Group Discussion
MK	200	Principles of Marketing
PA	308	Health Care Delivery Systems

Plus one restricted elective

Plus four free electives

Minor in Nutrition

The minor in nutrition is highly desirable in today's health-conscious marketplace and offers an opportunity for students to study personal nutrition, healthy eating for disease prevention or sports performance, food science, or cultural cuisine while strengthening their food preparation skills in the kitchen laboratory.

A total of 19 semester hours of nutrition and related coursework must be earned by a student to declare a minor in nutrition. This minor course of study has been approved by the Connecticut Division of Higher Education and includes the following three required courses:

BI	121	General and Human Biology with Laboratory I
DI	215	Principles of Nutrition
DI	342	Healthy Food Preparation

Plus any three of the following courses (or others) chosen in consultation with the Director of the Nutrition and Dietetics Program:

DI	150	Sports Nutrition
DI	200	Food Science and Preparation with Laboratory
DI	214	Menu Planning
DI	216	Food Safety, Sanitation, and Procurement
DI	315	Nutrition and Disease
HR	315	Volume Food Production and Service
HR	315	Cultural Understanding of Food and Cuisine

History

See DIVISION OF GLOBAL STUDIES, HISTORY, AND POLITICAL SCIENCE.

Interior Design

See VISUAL AND PERFORMING ARTS > Visual Arts.

Marine Biology

See Biology and Environmental Science.

Mathematics

Chair: W. Thurmon Whitley, PhD

Coordinator of Pre-Calculus Mathematics: Ali A. Jafarian, PhD

Professors Emeriti: Donald Fridshal, PhD, University of Connecticut; Joseph M. Gangler, PhD, Columbia University; Bruce Tyndall, MS, University of Iowa

Professors: Ali A. Jafarian, PhD, University of Toronto; Erik Rosenthal, PhD, University of California, Berkeley; Baldev K. Sachdeva, PhD, Pennsylvania State University; Ramesh Sharma, PhD, Banaras Hindu University, PhD, University of Windsor; James W. Uebelacker, PhD, Syracuse University; Shirley Wakin, PhD, University of Massachusetts; W. Thurmon Whitley, PhD, Virginia Polytechnic Institute and State University

Associate Professor: Marc H. Mehlman, PhD, University of California, Riverside

The study of mathematics opens the door to a wide variety of career opportunities and academic pursuits. Mathematics is a major part of the framework of modern science and technology. Persons with strong mathematics backgrounds qualify for stimulating occupations in an ever-increasing number of fields, from private industry to government service.

The mathematics department offers a BA in mathematics. In addition, concentrations in computer science, statistics, or natural sciences leading to a BS degree are offered. Students who do not take the computer science concentration are encouraged to consider a minor in computer science to be better prepared for our technological society. Students majoring in other fields may minor in mathematics.

Mathematics students have direct access to university computing facilities via computer laboratories throughout the campus. Several modern computing languages are available. The most modern and up-to-date data processing packages as well as mathematical and statistical software packages have been installed and are utilized in instruction.

Student Awards

Each year, the mathematics department awards to outstanding mathematics students free honorary memberships in the Mathematical Association of America and the Society for Industrial and Applied Mathematics.

In addition, the department annually awards the Bert Ross Mathematics Prize to the outstanding senior mathematics major. This award consists of a set of mathematics books and a certificate of achievement.

The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the chair of the Mathematics Department.

Basic Courses Required for All Mathematics Majors

All students earning a bachelor's degree in mathematics must complete the university core requirements, the course requirements for their particular math program, and the basic math courses listed below:

M	117-118	Calculus I and II
M	203	Calculus III
M	204	Differential Equations
M	305	Discrete Structures
M	308	Introduction to Real Analysis
M	311	Linear Algebra
M	321	Modern Algebra
M	331	Combinatorics
		or
M	361	Mathematical Modeling*
M	338	Numerical Analysis
M	371	Probability and Statistics I
M	472	Probability and Statistics II
M	491	Department Seminar

*both are required for BS, Applied Mathematics concentration

BA, Mathematics

This program is designed to provide students with a broad overview of mathematics and its applications, especially for students who wish to study pure mathematics or for those whose career objectives include mathematics education or the application of mathematics to such fields as business, economics, or the social sciences.

Students earning a BA with a mathematics major must complete a minimum of 124 credit hours. These courses must include the basic courses required for all mathematics majors listed above, the university core requirements listed earlier, and the courses listed below:

Required Courses

CS	110	Introduction to C Programming
CS	210	Java Programming
CS	226	Data Structures Using Collections
PH	150	Mechanics, Heat, and Waves with Laboratory

Plus 6 credit hours of mathematics compatible with area of concentration, M 300 series or above

Teaching Mathematics

Students interested in earning a teaching certificate in secondary education in mathematics may enter the graduate program at UNH. The BA in mathematics is the best choice for a major, but other majors are also acceptable. Please contact the Education Department for additional information.

BS, Mathematics

Students interested in applied mathematics should pursue the BS degree. Within this degree program, the concentrations of computer science, natural sciences, and statistics are offered.

Students earning a BS with a major in mathematics must complete a minimum of 124 credit hours. These courses must include the basic courses required for all mathematics majors listed above, the university core requirements listed earlier, and the courses listed below for one of the three concentrations.

Concentration in Computer Science

This program is primarily for students interested in using computing techniques to solve mathematical problems in a wide variety of disciplines. In addition to the mathematics requirements, students take eight or nine courses in computer science designed to provide training in the structure of computer languages, computing machines, and computing systems.

Students in this program must complete a minimum of 124 credit hours. These courses must include the basic courses required for all mathematics majors listed above, the university core requirements listed earlier, and the courses listed below:

Required Courses

CS	110	Introduction to C Programming
CS	210	Java Programming
CS	226	Data Structures Using Collections
CS	326	Data Structures and Algorithms
PH	150	Mechanics, Heat, and Waves with Laboratory

Restricted CS or Math Elective

Plus 9-12 credit hours in computer science; 9-12 credit hours in mathematics, chemistry, or physics (the number of credits here depends on specific upper-level electives chosen)

Concentration in Applied Mathematics

This program is primarily for students whose mathematical interests are in the application of mathematics to such fields as physics, chemistry, operations research, and engineering. In addition to the courses listed below, students take five to seven courses in a single discipline of the natural sciences or engineering.

Students in this program must complete a minimum of 125-127 credit hours. These courses must include the basic courses required for all mathematics majors listed above, the university core requirements listed earlier, and the courses listed below:

Required Courses

CS	110	Introduction to C Programming
CS	210	Java Programming
CS	226	Data Structures Using Collections
PH	150	Mechanics, Heat, and Waves with Laboratory
PH	205	Electromagnetism and Optics with Laboratory

Two-course science sequence

Plus 6 credit hours of mathematics compatible with area of concentration, M 300 series or above

Concentration in Statistics

This program is designed to provide students with a background in mathematical statistics. The mathematics courses required are basic courses necessary to enable a person to gain employment as a statistician in business or government or to pursue graduate study in statistics. These courses are also necessary for students wishing to pursue careers in the actuarial field.

Students in this program must complete a minimum of 124 credit hours. These courses include the basic courses required for all mathematics courses listed above, the university core requirements listed earlier, and the courses listed below:

Required Courses

M	473	Advanced Statistical Inference
M	481-482	Linear Models I and II
CS	110	Introduction to C Programming
CS	210	Java Programming
CS	226	Data Structures Using Collections
PH	150	Mechanics, Heat, and Waves with Laboratory

Plus 12 credit hours in science, computer science, or mathematics

Minor in Mathematics

Students may minor in mathematics by completing six mathematics courses approved by the department. Those students contemplating a minor in mathematics should consult with the department as early as possible in their academic careers as to the choice and availability of courses

Required Courses

M	118	Calculus II
M	203	Calculus III
M	311	Linear Algebra

Plus 9 credit hours of upper-level mathematics courses which complement the major area of interest

Recommended Courses

M	204	Differential Equations

Any course in the M 300 series or above

Modern Languages

See DIVISION OF GLOBAL STUDIES, HISTORY, AND POLITICAL SCIENCE.

Multimedia/Web Creation Studies

See VISUAL AND PERFORMING ARTS.

Music / Music Industry / Music and Sound Recording

See VISUAL AND PERFORMING ARTS > Music.

Nutrition and Dietetics

See DIVISION OF HEALTH PROFESSIONS.

Philosophy

See DIVISION OF GLOBAL STUDIES, HISTORY, AND POLITICAL SCIENCE.

Physics

Chair: W. Thurmon Whitley, PhD

Associate Professor: Matthew Griffiths, PhD, University of Edinburgh

Assistant Professor: Saion Sinha, PhD, University of Kentucky

Physics is concerned with the most basic aspects of our knowledge of the natural world. It is a subject in which experiment and theory evolve constantly to provide a precise and simple description of the physical phenomena around us in terms of a relatively small number of physical laws and theories.

As a fundamental science, physics is at the root of almost all branches of science and technology. It has provided the microscopic basis for chemistry, has stimulated important developments in mathematics, is the basis of most branches of engineering, and, during the past decade, has proved to be increasingly valuable to the life sciences.

Consequently, a basic knowledge of physics is excellent preparation for diverse careers: research in university and government laboratories, industrial research and development, applied science and engineering, biological and medical sciences, research in environmental problems, and teaching at all levels from the elementary school to the university. It also prepares students for careers in non-physics-related fields such as philosophy, business, and law.

The university does not currently offer a bachelor's degree program in physics. The department does, however, offer a minor in physics suitable for majors in any of the university's schools and departments. A physics minor is particularly valuable for students in chemistry, environmental science, biology, forensic sci-

ence, fire science, or occupational safety as well as for any student planning to teach any science at the elementary or secondary level.

The physics minor requires a total of 20 credit hours of work in physics. Students should plan their minor in consultation with a faculty advisor in the physics department.

Required Courses for Physics Minor

PH 150	Mechanics, Heat, and Waves with Laboratory
PH 205	Electromagnetism and Optics with Laboratory
PH 211	Modern Physics

Plus 9 credit hours of selected physics courses depending on the career interests of the student

Political Science

See DIVISION OF GLOBAL STUDIES, HISTORY, AND POLITICAL SCIENCE.

Psychology

Chair: John H. Mace, PhD

Professors: Robert J. Hoffnung, PhD, University of Cincinnati; Michael Morris, PhD, Boston College; Ronald H. Nowaczyk, PhD, Miami University; Gordon R. Simerson, PhD, Wayne State University; Michael W. York, PhD, University of Maryland

Assistant Professors: Tara L'Heureux-Barratt, PhD, University of Connecticut; Alexandria E. Guzmán, PhD, State University of New York at Binghamton; John H. Mace, PhD, City University of New York; Stuart D. Sidle, PhD, DePaul University

Practitioners-In-Residence: Dennis McGough, PhD, Union Institute in Cincinnati; Danielle I. Moreggi, PhD, Pacific Graduate School of Psychology

Professor Emeritus: Thomas L. Mentzer, PhD, Brown University

Although psychology is one of the newest branches of science, it has some very old roots. Psychology endeavors to answer some of humanity's oldest questions: How does our mind work? How do we interpret and use the information gathered by our senses? How do we learn things? How do we remember things? How and why are some things forgotten? How do we acquire language? How do we communicate verbally and non-verbally? What kinds of behavior are abnormal, why do they occur, and how can they be prevented? In what ways do our intellectual and perceptual faculties break down following brain damage? As the scientific study of mind and behavior, psychology tries to find answers to these and many other fundamental questions.

Our dedication to these goals requires that students study psychology from a variety of viewpoints. Thus, students take courses in cognitive, developmental, social, physiological, and clinical psychology. Our students also develop skills in experimental design and scientific analysis through the study of statistics, experimental methods, and psychological theory. Furthermore, through involvement in fieldwork, students have the opportunity for direct, practical experience in areas such as behavior therapy and community psychology.

We offer a general psychology concentration which permits students to tailor their preparation in a number of areas. This program combines basic science and applications and prepares students for further professional training in psychology or for careers in human services, law, education, business, and industry. We also have a specialty concentration in community/clinical psychology for those students who have well-defined professional goals.

Psychology majors are also encouraged to widen their preparation by taking courses (or minors) in sociology, political science, social welfare, management, computer science, criminal justice, mathematics, and biology. This ensures that our students' have a broad knowledge of many disciplines in the College of Arts and Sciences.

The psychology program benefits from a psychology laboratory building on the main campus. The laboratory contains facilities for student and faculty research.

The University of New Haven also offers the master

of arts degree in community psychology and in industrial/organizational psychology as well as a graduate certificate in applications of psychology. For descriptions of these programs, see the Graduate School catalog.

Psychology Club

Students in psychology have the opportunity to participate in the Psychology Club. Its purpose is to provide opportunities both to socialize and to develop students' interests in the science and profession of psychology. Throughout the year, the club sponsors guest lecturers and a variety of field trips. All students are welcome to join.

Psi Chi Honor Society

Membership in the university chapter of Psi Chi, the national honor society, is open to students in the top 35 percent of their class who have completed at least nine credit hours of psychology with grades of B or better and who are making the study of psychology one of their major interests.

Graduating seniors also may nominate themselves for the annually-awarded McGough psychology prize.

The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see the Department Chair.

BA, Psychology

The BA in psychology program requires the completion of 120 credits, 37 of which are required to complete the major.

To complete the major, students must complete 16 credit hours of core psychology courses and select one of two 21-credit-hour concentrations, **General Psychology** or **Community-Clinical Psychology**, described below.

Required Core Courses

P	111	Introduction to Psychology
P	301	Statistics for the Behavioral Sciences
P	305	Experimental Methods in Psychology
P	306	Psychology Laboratory
P	341	Psychological Theory

Concentration in General Psychology

The general psychology concentration consists of 21 credit hours of psychology courses beyond the required core courses to be distributed as follows.

Depth & Breadth Areas
(1 course from each of the 4 areas below)

Biological Psychology (1 course)

P	261	Drugs & Behavior
P	360	Cognitive Neuroscience
P	361	Behavioral Neuroscience

Clinical Psychology (1 course)

P	330	Introduction to Community Psychology
P	336	Abnormal Psychology
P	350	Human Assessment
P	375	Foundations of Clinical/Counseling Psychology

Cognitive & Experimental Psychology (1 course)

P	218	Sensation & Perception
P	220	Psychology of Language & Reading
P	312	Cognitive Psychology
P	315	Human and Animal Learning

Developmental/Personality/Social (1 course)

P	216	Psychology of Human Development
P	321	Social Psychology
P	355	Organizational Behavior
P	370	Psychology of Personality

Psychology Electives (3 courses)

Three psychology electives (9 credits) to be selected in consultation with an academic advisor.

Concentration in Community-Clinical Psychology

The community-clinical psychology concentration consists of 21 credit hours of psychology courses beyond the required core courses, to be distributed as follows.

Required Community-Clinical Psychology Courses

P	216	Psychology of Human Development
P	330	Introduction to Community Psychology
P	336	Abnormal Psychology
P	350	Human Assessment
P	375	Foundations of Clinical/Counseling Psychology

Depth & Breadth Areas
(1 course from each of the 2 areas below)

Biological Psychology (1 course)

P	261	Drugs & Behavior
P	360	Cognitive Neuroscience
P	361	Behavioral Neuroscience

Cognitive & Experimental Psychology (1 course)

P	218	Sensation & Perception
P	220	Psychology of Language & Reading
P	312	Cognitive Psychology
P	315	Human and Animal Learning

Minor in Psychology

Psychology, perhaps more than any other subject, relates closely to many other disciplines. A minor in psychology prepares you for graduate study in the field and can add another dimension to your studies in other programs at the university. A total of six courses is required for a minor in psychology.

Required Courses

P	111	Introduction to Psychology
P	301	Statistics for the Behavioral Sciences
P	305	Experimental Methods in Psychology

Plus 9 additional credits of psychology electives.

Exceptions to the requirements above can be made for students whose major programs contain required courses that are equivalent to P 301 and P 305 (such as CJ 251 and CJ 250). Such students may be permitted to substitute advanced psychology courses for P 301 and P 305. Exemptions will be granted on a case-by-case basis by the chairperson of the Psychology Department.

Sociology

See DIVISION OF GLOBAL STUDIES, HISTORY, AND POLITICAL SCIENCE.

Theatre Arts

See VISUAL AND PERFORMING ARTS.

Visual and Performing Arts

Chair: Guillermo E. Mager, PhD

Professor Emeriti: Elizabeth J. Moffitt, MA, Hunter College; Ralf E. Carriuolo, PhD, Wesleyan University

Professor: Michael G. Kaloyanides, PhD, Wesleyan University

Associate Professor: Guillermo E. Mager, PhD, New York University

Assistant Professors: John Arabolos, MA, Pratt Institute of Design; Albert G. Celotto, MA, Indiana University; Bernard J. Keilty, MA, Georgetown University; Christy A. Somerville, MA, California State University-Long Beach

Instructors: Robert C. Boles, MFA, Sarah Lawrence College; Todd Jokl, MA, University of Connecticut; Victor Markiw, MFA, SUNY Purchase

Practitioner-in-Residence: Richard Blakin, Recording Studio Manager

Multimedia/Web Creation Studies

Coordinator: Todd Jokl, MA

Multimedia is the use of computers for the integration of graphics, animation, video, music, speech, and live presentation. Active markets for multimedia include (1) the Internet, where careers in web page creation and website management have grown exponentially in recent years; (2) business, where computer presentations have taken the place of slide shows; (3) education, where teachers and parents are finding new ways to present their material; and (4)

the entertainment industry, with the ever-growing use of computers for special effects in games, music videos, and films.

Multimedia studies will enable graduates from programs in graphic design, music, education, business, and many other disciplines to use the computer not only to generate traditional print materials but also to design interactive programs for use in websites, CD-ROMs, business presentations, games, and educational software.

The multimedia courses and the web page creation courses have been designed to allow students to use computer, audio, video, and graphic technologies to conceptualize and implement interactive interfaces in a comprehensive approach that includes the multimedia production process, the technology, and the aesthetic design.

Minor in Multimedia/Web Creation

A total of seven courses (21 credits) is required to complete the minor in multimedia/web creation.

Required courses (9 credits):

MM 301	Introduction to Multimedia
MM 311	Advanced Multimedia *or*
	MM 312 Web Creation
MM 401	Multimedia Seminar

Plus **two of the following sequences (12 credits)*:**

MU 311-312	Multitrack Recording I and II
AT 203-204	Graphic Design I and II
CO 212-312	Television Production I and II

* These courses must be taken outside the student's major area of study (for example, music majors may not use MU 311-312). Also, note that some of these courses have prerequisites.

Music

Coordinators: Michael G. Kaloyanides, PhD

Music courses may be used to satisfy the arts core requirements.

The program in music is unique. Music is studied as a worldwide phenomenon, not defined simply in the western European art tradition. Students are encouraged to view music as a creation of all cultures and civilizations on both the folk and art levels, including our own urban and ethnic subcultures. Exposure to various music should lead students to specialization in a particular area as upperclasspersons.

Since music is a performing art, students are expected to reach a satisfactory level of proficiency in either a traditional western instrument or one central to the particular culture in which they choose to specialize.

A degree in music qualifies students for professions as performers, composers, music publishers, critics and journalists, teachers, curators, and librarians. Combining music with other fields, graduates may enter the fields of concert and ensemble management and sound engineering areas. There are, of course, countless performance opportunities for instrumentalists, vocalists, and composers. Vocations such as music publishing, recording sales and promotions, and music criticism and journalism are also available to graduates with a degree in music. Students may also pursue careers in music education, not only as teachers in schools and conservatories but also as curators and librarians.

Performance/Practice and Recording Facilities

In addition to traditional performance and practice rooms, the following special areas have been equipped for the use of students enrolled in the music industry and sound recording programs.

Our recording studios have been designed as both teaching and professional recording environments. Both control rooms offer comfortable seating for students as well as providing excellent views of the consoles, computer screens, and associated technology.

Studio A

Advanced recording seminar classes take place in our newest facility, an all-digital computer-based studio running Digidesign's Pro-Tools TDM system, the industry standard for professional recording studios. Additional equipment includes a Yamaha 56-input digital console, Roland music workstation, Yamaha MOTIF synthesizer, and Universal Audio microphone pre-amplifiers.

Studio B

The multitrack recording technology classes take place in a second recording facility. Equipment includes a 24-track analog and two 8-track digital recorders for a total of 40 tracks; a 40-input/32 monitor console for a total of 72 inputs in mix mode; an Apple Macintosh computer running Digidesign's Pro-Tools system; an extensive selection of outboard (signal processing) equipment; and MIDI gear, including synthesizer, drum machine, and an AKAI music production center.

Studio C

Recording fundamentals classes take place in a third recording facility with a 16-input/16 monitor console, a digital multitrack recorder, a computer with digital audio and MIDI sequencing capabilities , assorted signal processing equipment, and MIDI synthesizer and drum machine.

Workstations

Our digital mixing workstation contains Tascam multitrack recorders and a digital mixing board, a Macintosh computer running Digidesign's Pro-Tools, and assorted signal processing gear.

Additional workstations can be rolled into classrooms for the Recording Fundamentals and the Sound Synthesis/MIDI classes.

BA, Music

The bachelor of arts in music is a dynamic program for the study of music within a liberal arts curriculum. It is distinctive in its treatment of music as a worldwide phenomenon. It is also flexible, allowing students to focus on performance or musicology.

Students focusing on performance are urged to take private instruction on an instrument or in voice each semester of enrollment. Seniors must present either a senior thesis or a senior recital to qualify for graduation. There are options in the senior year curriculum for courses appropriate for thesis or recital preparation.

All students majoring in the BA in music programs must complete 121-122 credit hours.

Required Courses

Courses must include the core requirements of the university plus the following:

MU 111	Introduction to Music
MU 112	Introduction to World Music
MU 116	Performance (12 credit hours minimum)
MU 125-126	Elementary Music Theory with Laboratory (if required)
MU 150-151	Introduction to Music Theory I and II
MU 175-176	Musicianship I and II
MU 201-202	Analysis and History of European Art Music I and II
MU 501	Seminar in Advanced Research I
	or
MU	416 Advanced Performance
MU 502	Seminar in Advanced Research II
	or
MU 416	Advanced Performance

Plus music electives (6 credit hours)
Plus one literature elective
Plus eleven electives

BA, Music Industry

The music industry program is offered to anyone interested in an exciting career in the fields of music management, arts administration, record production, promotion and sales, marketing, artist management, music publishing, and any other areas in the entertainment industry.

The program provides a unique balance of courses in the areas of music, sound recording, and business as well as music industry. The music courses include such topics as music theory, musicianship, music history, and performance. The sound recording courses include multitrack recording, digital audio, and the use of computers in the recording studio. The business courses cover areas such as accounting, management, and marketing.

The music industry courses, specifically designed for this program, cover topics such as record companies, contracts, music marketing and merchandising, recording studio management, music publishing, copyright law and concert planning, promotion, and management. Special emphasis will be given to career planning and development.

Required Courses

Courses must include the university core requirements plus the following:

MU 111	Introduction to Music
	or
MU 112	Introduction to World Music
MU 125-126	Elementary Music Theory with Laboratory (if required)
MU 150-151	Introduction to Music Theory I and II

Plus the following:

MU 116	Performance
MU 175-176	Musicianship I and II
	or
MU 201-202	Analysis and History of European Art Music I and II
MU 211	History of Rock
MU 261	Introduction to the Music Industry
MU 301	Recording Fundamentals
MU 311	Multitrack Recording I
MU 312	Multitrack Recording II
	or
MU 321	Sound Synthesis/MIDI
MU 361	Production, Promotion, and Distribution
MU 362	Legal Issues, Copyrights, and Contracts
MU 461-462	Internship in the Music Industry I and II

Plus music electives (6 credits)

A 101	Introduction to Financial Accounting
A 102	Introduction to Managerial Accounting
MG 115	Fundamentals of Management
MK 200	Principles of Marketing

Plus business electives (6 credits)

Plus five electives

BA, Music and Sound Recording

The bachelor of arts in music and sound recording is a unique four-year degree program. Its development is based on the philosophy that musicians should have a working knowledge of the media through which their art is most often heard and that sound recordists should have a working knowledge of the art form they are recording. Thus, the program is designed to instruct students in three interrelated areas: 1) music history, theory, and aesthetics; 2) musicianship; and 3) sound recording methodology and technique. Coursework includes 38 credits in arts and sciences, 36 credits in music, 15 credits in recording, and 34 credits in restricted and free electives, for a total of 123.

Required Courses

Courses must include the university core requirements plus the following:

MU 111	Introduction to Music
MU 112	Introduction to World Music
MU 116	Performance (6 credit hours minimum)
MU 125-126	Elementary Music Theory with Laboratory (if required)
MU 150-151	Introduction to Music Theory I and II
MU 175-176	Musicianship I and II
MU 201-202	Analysis and History of European Art Music I and II
MU 211	History of Rock
MU 221	Film Music
MU 301	Recording Fundamentals
MU 311-312	Multitrack Recording I and II
MU 321	Sound Synthesis/MIDI
MU 401-402	Recording Seminar/ Project I and II
PH 100	Introductory Physics with Laboratory
PH 203	The Physics of Music and Sound with Laboratory

BS, Music and Sound Recording

The bachelor of science in music and sound recording is similar to the bachelor of arts program in its philosophy and design but provides a stronger background in the science and technology of recording through classes in calculus, physics, and electrical engineering. Coursework includes 47 credits in arts and sciences, 36 credits in music, 15 credits in recording, 6 credits in electrical engineering, and 19 credits in restricted and free electives, for a total of 123 credits.

Required Courses

Courses must include the university core requirements plus the following:

MU 111	Introduction to Music
MU 112	Introduction to World Music
MU 116	Performance (6 credit hours minimum)
MU 125-126	Elementary Music Theory with Laboratory (if required)
MU 150-151	Introduction to Music Theory I and II
MU 175-176	Musicianship I and II
MU 201-202	Analysis and History of European Art Music I and II
MU 211	History of Rock
MU 221	Film Music
MU 301	Recording Fundamentals
MU 311-312	Multitrack Recording I and II
MU 321	Sound Synthesis/MIDI
MU 401-402	Recording Seminar/Project I and II
EAS 230	Fundamentals and Applications Analog Devices
EE 235	Analog Circuits
M 117-118	Calculus I and II
PH 150	Mechanics, Heat, and Waves with Laboratory
PH 205	Electromagnetism and Optics with Laboratory

Minor in Music

A total of 18 credit hours in music courses other than performance is required for the minor in music. A student's program should be planned in consultation with a member of the music faculty.

Theatre Arts

Coordinator: Robert C. Boles, MFA

Theatre courses may be used to satisfy the arts core requirements. Refer to the latest class schedule bulletin to determine the specific courses permitted.

Productions

The university community may take part in all departmental productions. Volunteers may act in productions as well as help with lighting, set, and costume design; set construction; publicity; and stage management. Participants need not be enrolled in theatre classes.

Minor in Theatre Arts

Students may complete a minor in theatre arts by taking 18 credit hours in the theatre program. Three major productions are mounted each year by the department, with opportunities for students in performance, directing, and backstage work.

Required Courses

T 131	Introduction to the Theatre
T 132	Theatrical Style
T 241	Early World Drama and Theatre
T 242	Modern World Drama and Theatre

Plus 6 additional credit hours in theatre arts, chosen from T 341 Acting, T 342 Play Directing, T 491 Production Practicum I, T 492 Production Practicum II, and T 599 Independent Study

Visual Arts

Coordinator: Christy A. Somerville, MA

Study of the visual arts provides an opportunity for self-realization and gives the individual a perception of his or her relationship to society. Foundational courses in the basics of two- and three-dimensional design, color, and drawing, plus work in such major disciplines as painting, sculpture, and the use of computers as a design tool, provide the student with the necessary vocabulary for effective visual communication.

Knowledge of the development of art throughout human cultural evolution from the cave era to present day is provided through studies in art history and the contemporary art scene. Thus, equipped with a working vocabulary of visual form and a sense of art history, students progress toward the goal of making a mature visual statement in their chosen fields.

University of New Haven art programs provide preparation for graduate study or career opportunities in fields related to art, graphic design, interior design, and architecture.

Students in all BA art programs listed below must complete at least 121 credit hours. These courses must include the core requirements for the university and the required courses as listed for each program.

The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in the catalog, or contact the Co-op coordinator for the College of Arts and Sciences.

Basic Courses Required for Art Majors, BA in Art or Graphic Design

AT	105-106	Basic Drawing I and II
AT	201	Painting I
AT	211-212	Basic Design I and II
AT	213	Color
AT	231-232	History of Art I and II
AT	401-402	Studio Seminar I and II

Basic Courses Required for Art Majors, BA Interior Design

AT	106	Basic Drawing I
AT	211-212	Basic Design I and II
AT	213	Color
Art History Elective		
AT	231-232	History of Art I and II
		or
AT	331	Contemporary Art

Basic Courses Required for Art Majors, AS

AT	211-212	Basic Design I and II
AT	213	Color

BA, Art

This program is designed to assist students in discovering their potential for creative expression in the plastic arts and the development of a personal idiom in disciplines of their own choosing including painting, sculpture, drawing, printmaking, etc. Acquisition of an effective visual vocabulary is promoted by foundational courses in two- and three-dimensional design, color, and drawing. Art historical studies provide perspective on art forms of the past.

The program prepares students for graduate study in art as well as for career opportunities in a broad spectrum of art and art-related fields.

Required Courses

Basic courses required for art majors, BA, are the following:

AT	101-102	Introduction to Studio Art I and II
AT	202	Painting II
AT	205	Ceramics I
AT	209	Photography I
AT	302	Figure Drawing
AT	304-305	Sculpture I and II
AT	315	Printmaking

Plus one art history elective and two art electives

Plus seven electives

BA, Graphic Design

Graphic design, the art of visual communication through words and pictures, is an expanding discipline. Posters, publications, identity systems, graphs, diagrams, information design, signage, and exhibits are components of the visual environment in which we live. The graphic designer's duty is to bring clarity and visual aesthetics to communication through an understanding of theory, design practice, and technology.

The introductory courses in the graphic design program concentrate on basic design vocabulary, composition, color perception, drawing, introduction to the use of computers as a design tool, and photography. The junior and senior year curriculum focuses on typographic studies, illustration, critical analysis, problem-solving methodology, advanced computer projects, and complex applied design projects, preparing the students for graphic design positions in design studios, corporations, and agencies, as well as for graduate studies in the field.

Required Courses

Basic courses required for graphic design majors, BA, are the following:

AT	122	Graphic Design Production
AT	203-204	Graphic Design I and II
AT	209	Photography I
AT	221-222	Typography I and II
AT	309	Photographic Design
AT	315	Printmaking
AT	322	Illustration
AT	401-402	Studio Seminar I and II
AT	403-412	Selected Topics (one course)
AT	599	Independent Study (Graphic Design)
MK	307	Advertising and Promotion

Plus a course in computer design and a senior project

Plus five electives

AS, Graphic Design

Required Courses

Basic courses required for graphic design majors, AS, are the following:

AT	122	Graphic Design Production
AT	203	Graphic Design I
AT	209	Photography I
AT	221-222	Typography I and II
AT	309	Photographic Design

Plus the university's associate's degree core

Minor in Art

A total of 18 credit hours of work in art is required for the minor in art. Students may take the courses listed below and any other combination of courses that fills their needs and interests.

Recommended Courses

AT	105	Basic Drawing I
AT	201	Painting I
AT	213	Color
AT	302	Figure Drawing
AT	304	Sculpture I

Recommended Courses for a photography interest

AT	209-210	Photography I and II
AT	225	Photographic Methods
AT	309	Photographic Design
AT	310	Photographic Lighting

Plus one special topics course such as Digital Imaging.

Recommended Courses for a graphic design interest

AT	122	Graphic Design Production
AT	211	Basic Design I
AT	203-204	Graphic Design I and II
AT	213	Color
AT	221	Typography I
		or
AT	322	Illustration

Recommended Courses for an interior design interest

ID	109-110	Architectural Drawing I and II
ID	211-212	Interior Design I and II
ID	213	Color
ID	315	History of Architecture and Interiors I
		or
ID	316	History of Architecture and Interiors II

BA, Interior Design

Studies in the interior design programs are organized to focus on the construction and technology of the built environment for a broad range of residential, commercial, and institutional spaces. Programming and problem-solving abilities are developed through two-dimensional visualization techniques and three-dimensional model building. Hand drawn and computer-generated drawings and documents provide the basis for implementing design solutions. During the first two years of the program, students develop their theoretical understanding of design and their technical drawing skills through courses in architectural drawing, sketching and rendering, construction documents, interior systems, materials and codes, lighting design, and residential and commercial interior design studios. Advanced courses in interior products and furniture design and specifications; computer aided design (CAD); history of architecture, interiors, and furniture; independent studies and internships; and interior design studies focused on areas such as kitchen and bath design, office design, hospitality and restaurant design, retail, healthcare, historic preservation, etc. are completed during the third and fourth year. Career preparation is developed through a professional practices course and a series of portfolio design and

production courses culminating in a senior portfolio.

Through real-life learning projects and field trips, students develop an understanding of the relationship between interior designers and clients, the interaction between interior designers and architects and other specialized professionals, and methods of communication between designers and fabricators. The program's award-winning student chapter of the American Society of Interior Designers and affiliations with the design community for internships and job placements provide students with excellent opportunities to network with and develop a clear understanding of the profession of interior design.

Required Courses

Courses must include the university core plus the following required courses for interior design majors, BA:

ID	100	Portfolio Design
ID	109-110	Architectural Drawing I and II
ID	200	Portfolio Production I
ID	211-212	Interior Design I and II
ID	213	Architectural Drawing III
ID	214	Interior Lighting and Specifications
ID	215-216	Construction Documents I and II
ID	217	Sketching and Rendering for Interiors
ID	218	Interior Systems, Materials, and Codes
ID	300	Portfolio Production II
ID	311-312	Interior Design III and IV
ID	313-314	CAD for Interiors I and II
ID	315-316	History of Architecture and Interiors I and II
ID	317	Interior Products and Specifications
ID	318	Furniture Design and Specifications
ID	400	Portfolio Presentation
ID	411-412	Interior Design V and VI
ID	413	Professional Practices for Interior Designers
ID	598	Internships for Interiors and Allied Fields
		or
ID	598	Independent Study

Plus the following art courses:

AT	105	Basic Drawing I
AT	211-212	Basic Design I and II
AT	213	Color

And one of the following art history courses:

AT	231-232	History of Art I or II, or
AT	331	Contemporary Art

Plus two electives (6 credits)

Concentration in Interior Design/ Prearchitecture

Studies in the interior design/pre-architecture concentration follow the same program format as the interior design degree program with the additional preparation of calculus, physics, and city planning. This concentration prepares the student to potentially enter a professional degree program such as architecture at the graduate school level.

Required Courses

Courses must include the university core plus the following required courses for interior design/pre-architecture concentration majors, BA:

ID	100	Portfolio Design
ID	109-110	Architectural Drawing I and II
ID	200	Portfolio Production I
ID	211-212	Interior Design I and II
ID	213	Architectural Drawing III
ID	214	Interior Lighting and Specifications
ID	215-216	Construction Documents I and II
ID	217	Sketching and Rendering for Interiors
ID	218	Interior Systems, Materials, and Codes
ID	300	Portfolio Production II
ID	311-312	Interior Design III and IV
ID	313-314	CAD for Interiors I and II
ID	315-316	History of Architecture and Interiors I and II
ID	317	Interior Products and Specifications
ID	318	Furniture Design and Specifications
ID	400	Portfolio Presentation
ID	411-412	Interior Design V and VI
ID	413	Professional Practices for Interior Designers
ID	598	Internships for Interiors and Allied Fields
		or
ID	598	Independent Study

Plus the following art courses:

AT	105	Basic Drawing I
AT	211-212	Basic Design I and II
AT	213	Color

And one of the following art history courses:

AT	231	History of Art I
		or
AT	232	History of Art II
		or
AT	331	Contemporary Art

Plus the following courses for the pre-architecture concentration:

M	115	Pre-calculus (fulfills the core curriculum math requirement)
M	117	Calculus
PH	103	General Physics with Laboratory
		or
PH	105	Mechanics, Heat, and Waves with Laboratory (either course fulfills the core curriculum Science with lab requirement)
CE	403	City Planning

AS, Interior Design

Required Courses

Courses must include the university core plus the following required courses for interior design majors, AS:

ID	100	Portfolio Design
ID	109-110	Architectural Drawing I and II
ID	200	Portfolio Production I
ID	211-212	Interior Design I and II
ID	213	Architectural Drawing III
ID	214	Interior Lighting and Specifications
ID	217	Sketching and Rendering for Interiors
ID	315-316	History of Architecture and Interiors I and II

Plus the following art courses:

AT	105	Basic Drawing I
AT	211-212	Basic Design I and II
AT	213	Color

Plus one elective (3 credits)

Recommended Electives

AT	203	Graphic Design I
AT	309	Photographic Design
MM	301	Introduction to Multimedia

Visual Arts

See VISUAL AND PERFORMING ARTS.

SCHOOL OF BUSINESS

Jess Boronico, PhD, Dean
Raja Nag, PhD, Associate Dean

Vision Statement

To be a preeminent and distinguishable leader among institutions of higher education in the provision of academic business programs.

Mission

To provide high-quality, career-advancing business education opportunities within an environment of lifelong learning. The School of Business sets the PACE … through its dedication to ensuring:

P: Practical Technology Applications and Professional Enrichment

A: Academic Excellence

C: Communication Skill Development

E: Experiential Learning Opportunities.

Business Programs:

Bachelor of Science (BS)

- Accounting
- Finance
- Hotel and Restaurant Management
- Management*
- Management*: Concentration in Management of Sports Industries
- Management of Sports Industries
- Marketing*
- Tourism and Event Management*

Associate in Science (AS)

- Management*

Minors

- Accounting
- Behavioral Economics
- Entrepreneurship
- Finance
- International Business
- Management*
- Marketing*
- Quantitative Analysis

Business-Related Programs:

Bachelor of Science (BS)

- Communication
- Public Administration (evening courses only)

Associate in Science (AS)

- Communication

Minors

- Communication

Certificates

- Journalism
- Mass Communication

* Permission for program name changes is being sought from the Connecticut Department of Higher Education. "Management" degrees currently titled "Business Administration." "Marketing" degree currently titled "Marketing and Electronic Commerce." "Tourism and Event Management" degree currently titled "Tourism and Hospitality Administration."

The School of Business PACE program

The School of Business Personalized Academic Curricular Experience (PACE) program is open to all School of Business majors pursuing a BS degree, regardless of the area of study. This program provides each student with an opportunity to become engaged in a thematic learning experience that focuses on the student's career interest and aspiration. Using this area as a guide, the student selects twelve credit hours of corresponding courses, offered outside of the School of Business, with the assistance of an advisor. These courses must be thematically linked in a way that advances the preparation for career placement and must strengthen the academic background in a way

that supplements business-related expertise. Additional information may be obtained from School of Business advisors.

The Robert Alvine Professional Enrichment Program

All School of Business students may participate in the Robert Alvine Professional Enrichment Program. Students pursuing a BS degree in a business program must participate by way of curricular requirements in certain courses. This program offers co-curricular activities during which students meet and network with area specialists; learn from business leaders; become involved in work-related endeavors such as internships, practicum, and job shadowing; and attend various seminars, workshops, and forums that deal with professional readiness and work-related issues or emerging issues that impact on the business environment. The Professional Enrichment Program builds upon the academic programs by (a) providing cutting-edge information and knowledge concerning matters that impact on the operation of business and (b) merging theory into practice by way of the professional expertise and orientation of the session speakers.

Academic Policies:

1. At least 50% of all business program core credit hours (i.e., a minimum of 15 credit hours) required for the BS degree in business programs must be earned through coursework completed at the School of Business at UNH.
2. At least 50% of the major-specific course credit hours (i.e., a minimum of 15 credit hours) required for the BS degree in business programs must be earned through coursework completed at the School of Business at UNH. Major-specific coursework includes all credit hour requirements in both the eighteen-credit-hour major requirement and the twelve-credit-hour business restricted elective requirement.
3. No credit for coursework completed at a community/two-year institution may be applied to, or transferred in as, 300, 400, or 500 level courses that are offered by the School of Business.
4. Courses completed at AACSB-accredited institutions may be transferred into the business programs for equivalent level courses offered by the School of Business at all levels. Credits earned at four-year non-AACSB accredited schools may be transferred only with the approval of the chair of the department offering the course and the Dean of the School of Business.
5. Students pursuing either a dual School of Business major or a second School of Business BS degree must meet all degree curriculum requirements for each major/degree. A minimum of eighteen School of Business non-overlapping credit hours must be completed for each new major/degree program completed; credit hours taken must have the approval of the department chair/program director.
6. To receive a degree from the School of Business, the final 30 credit hours completed must be earned at UNH.

Evening Accelerated Business Programs

The School of Business offers Evening Accelerated Business Programs for both full- and part-time day students as well as evening part-time working professionals. Full-time students who are financial aid recipients should consult with the Financial Aid Office to ensure that Accelerated Program courses meet enrollment eligibility criteria for federal financial aid programs. The Accelerated Program courses are scheduled in five modules throughout the academic year and are primarily cohort-driven. Evening or day students may register for Accelerated Program courses any time prior to the start of the module, following the general procedures specified for evening students. Complete degree requirements for the BS in Management and the BS in Accounting are offered for evening students; curriculum requirements for these day and evening programs are identical. For additional information about the Accelerated Program and its courses, please call Nick Spina at (203) 932-7361 or 1-800-DIAL-UNH, ext. 7361.

University Core Curriculum

In addition to departmental requirements, students must fulfill all requirements of the core curriculum on page 15.

Academic Program Structure: Business Programs

All School of Business BS degree business program credit hours are categorized into one of six groups and conform to the following template:

University Core Curriculum:
Core: 37 credit hours (40 including QA380)
Electives/ PACE program: 12 credit hours
Non-Business Restricted Electives: 12 credit hours

Business Program Core:
30 credit hours*
Major: 18 credit hours
Restricted Electives: 12 credit hours

* QA380 satisfies a core curriculum requirement but is tabulated with the business program core credit hours.

Additional detail is provided below:

University Core Curriculum:
37 credit hours (40 credit hours including QA 380)

The following courses must be completed and will be utilized in partial fulfillment of Core Curriculum requirements:

Communication (choose one)

CO	100	Human Communication
E	230	Public Speaking and Group Discussion

This course will be used to fulfill core competency requirement 1.2.

Quantitative Analysis

M	109	Intermediate Algebra

This course will be used to fulfill core competency requirement 2.2.

Technology Applications

QA	380	Operations Management

This course will be used to fulfill core competency requirement 3.

Economic Foundations

EC	133	Principles of Economics I

This course will be used to fulfill core competency requirement 5.3.

EC	134	Principles of Economics II

This course will be used to fulfill core competency requirement 2.3.

Political Science (choose one)

PS	121	American Government and Politics
PS	122	State and Local Government and Politics

This course will be used to fulfill core competency requirement 4.2.

Behavioral Science (choose one)

P	111	Introduction to Psychology
SO	113	Sociology

This course will be used to fulfill core competency requirement 5.1.

Non-Business Electives/PACE program:
12 credit hours

These credit hours may be used to fulfill the requirements of the School of Business PACE program; otherwise they may be used as free electives, unless specifically designated. Students should check their academic program of choice for specific credit hour requirements.

Non-Business Restricted Electives: 12 credit hours

QA	118	Business Mathematics
QA	216	Business Statistics

Six additional credit hours are required and may be specifically designated by major. Consult the academic program of choice for those courses that satisfy this credit hour requirement.

School of Business Program Core:
30 credit hours

These courses develop the foundation knowledge and competencies from which major-specific coursework may follow.

A	101	Introduction to Financial Accounting
A	102	Introduction to Managerial Accounting
LA	101	Business Law and the Regulatory Environment
FI	213	Business Finance
MK	200	Principles of Marketing
MG	210	Management and Organization
MG	240	Business Ethics and Diversity
QA	343	Management Information Systems*
QA	380	Operations Management‡
MG	550	Business Policy

* Students pursuing the BS in Accounting substitute A250 Accounting Information Systems for QA343.

‡ Credit hours for this course are used in fulfillment of Core Curriculum Competency 3.

School of Business Major Requirement:
18 credit hours

Students should check their academic program of choice for specific curricular requirements, which build upon the business program core and offer in-depth exposure to advanced material related to the area of study.

School of Business Restricted Electives:
12 credit hours

These credit hours provide additional advanced material either in the major or in coursework that reflects emerging issues of importance. Students should check their academic program of choice for specific curricular requirements.

Academic Program Structure: Business-Related Programs

School of Business business-related program requirements are specific to the area of study. Students pursuing these academic programs should check the academic program of choice for all specific curricular requirements.

Accounting

Chair: Robert E. Wnek, LLM, JD, CPA

Professors: Robert E. Wnek, LLM Boston University School of Law, JD, CPA

Associate Professors: Alireza Daneshfar, PhD, Concordia University; Robert McDonald, MBA, New York University, CMA, CPA, CIA, CFA; Michael Rolleri, MBA, University of Connecticut, CPA

Assistant Professors: Martin A. Goldberg, LLM, New York University, JD; Scott J. Lane, PhD, University of Kentucky, CPA

Practitioner-In-Residence: Mary Miller, MBA

The Accounting department oversees courses in accounting, business law, and taxation. While the study of accounting has its roots in economic theory, the courses emphasize practical application to real-world problems and the decision-making process, as well as principles and procedures used to produce the information required by decision makers. Accounting promotes an appreciation for not only the nature of accounting information but also the use of that information in the complex process of decision-making by individuals, business firms, and government. The department of Accounting at the University of New Haven seeks to serve the educational needs of those involved in all areas of accounting: public, private, or government.

There are many career opportunities for accounting students in the business world, government, and academia. Accounting professionals are needed by consulting firms, public accounting firms, and private industry as well as by federal, state, and local governments. An educational opportunity is also available to students who desire to meet the 150-credit-hour educational requirements necessary to take the Certified Public Accounting (CPA) examination. These additional educational requirements may be taken at the graduate level, leading to an MBA degree.

BS, Accounting (Business program)

The Accounting major is selected by students wishing to pursue a career in management accounting or in public accounting leading to the Certified Public Accounting (CPA) license. The integration of business law, taxation, and finance into the program requirements provides the necessary academic background to meet the challenges of the accounting profession.

Students earning a BS in Accounting are required to complete 121 credit hours, including the Core Curriculum (37 credit hours), Core Curriculum Restricted Electives (12 credit hours), and Core Curriculum Electives/PACE requirements (12 credit hours), as well as the Business Program Core (30 credit hours). Requirements are identical for both the day and evening programs. The following are in addition to the aforementioned curricular requirements:

Core Curriculum Non-Business Restricted Elective:

EC 200 Global Economy
This course will be used, together with QA118 and

QA216, to partially fulfill the core curriculum non-business restricted elective credit hour requirement.

Business Program Core:

A 250 Accounting Information Systems
This course will replace, for all Accounting majors, QA343 Management Information Systems in the Business Program Core.

Business Major: 18 credit hours

A 220 Intermediate Financial Accounting I
A 221 Intermediate Financial Accounting II
A 323 Cost Accounting
A 422 Intermediate Financial Accounting III
A 431 Advanced Financial Accounting
A 433 Auditing and Reporting Principles

Business Restricted Electives: 12 credit hours

A 435 Federal Income Taxation I
A 436 Federal Income Taxation II
Six additional credit hours are chosen in consultation with the advisor.

Minor in Accounting (Business program majors only)

Requirements for the minor in Accounting, for business program majors only, are nine credit hours beyond the business program core:

A 220 Intermediate Financial Accounting I
A 221 Intermediate Financial Accounting II
Three additional accounting credit hours are chosen in consultation with the advisor.

Communication and Marketing

Chair: Jerry L. Allen, PhD

Professor Emeritus: Robert P. Brody, DBA Harvard University

Professors: Jerry L. Allen, PhD, Southern Illinois University at Carbondale; George T. Haley, PhD, University of Texas at Austin; Ben B. Judd, Jr., PhD, University of Texas at Arlington; Marilou McLaughlin, PhD, University of Wisconsin; David J. Morris, Jr., PhD, Syracuse University; Steven A. Raucher, PhD, Wayne State University; Donald C. Smith, PhD, University of Massachusetts at Amherst; Cheng Lu Wang, PhD, Oklahoma State University

Assistant Professor: Subroto Roy, PhD, University of Western Sydney

Instructor: Paul C. Falcone, MBA, University of New Haven

Communication Programs (Business-related programs)

Students in this program develop a comprehensive understanding of interpersonal communication, as well as organizational communication, public relations, and advertising, in addition to mass communication (journalism, radio, television, and film). The program blends theoretical concepts and skills, academic rigor, and hands-on experience to prepare students for careers in business, the public sector, or the media or for additional studies at the graduate level.

An active internship is a valuable complement to the student's classroom studies. The department offers internships with regional and national businesses, public service organizations, and print and electronic media. Communication majors can gain additional experience through writing for *The Charger Bulletin* (the student newspaper), being on the staff at WNHU-FM (the campus radio station), doing programming for local television, and/or producing specialized film and video programs.

Faculty of the department have served as editors and/or associate editors of more than a half dozen of the top-tier scholarly journals in the communication field and have received national and international recognition; all faculty members do research, publish, and have practical experience in their communication specialties. Faculty and students belong to such professional organizations as the International Communication Association; the Public Relations Society of America; the Eastern Communication Association; the National Association of College

Broadcasters; the National Academy of Television Arts and Sciences; the National Academy of Cable Programming; the National Federation of Local Cable Programming; the American Film Institute; the Broadcast Educators' Association; the National Communication Association; the Association for Educational Journalism and Mass Communication; the Organization for the Study of Communication, Language, and Gender; the World Communication Association; and the International Listening Association.

In the interest of maximizing students' communication experiences as well as encouraging professional contacts and advancement, the department urges students to enter regional and national competitions in public relations, advertising, radio, television, and film.

Lambda Pi Eta

The department sponsors the Beta Kappa Chapter of Lambda Pi Eta, the national communication honor society. To receive honorary membership in this prestigious organization, students must have at least 45 university credits and at least nine credits in communication courses. They must have a 3.0 cumulative average and a 3.25 GPA in communication courses. Members become part of a national network of communication majors and may showcase their work at regional and national conferences.

BS, Communication (Business-related program)

Students earning a BS in Communication are required to complete 121 credit hours, including the Core Curriculum, and the Communication Program Core.

Core Curriculum:
40 credit hours

The following courses must be completed and will be utilized in partial fulfillment of Core Curriculum requirements:

HS 108	History of Science
	or
HU 300	The Nature of Science

This course will be used to fulfill core competency requirement 2.3.

MM 301 Introduction to Multimedia
This course may be used to fulfill core competency requirement 3.

Core Curriculum Electives/PACE program:
12 credit hours

These credit hours may be used to fulfill the requirements of the School of Business PACE program; otherwise they may be used as free electives, unless specifically designated. Students should check their academic program of choice for specific credit hour requirements.

School of Business Communication Core:
42 credit hours

These courses develop the foundation knowledge and competencies from which additional advanced coursework may follow.

CO 100	Human Communication
CO 101	Fundamentals of Mass Communication
CO 102	Writing for the Media
CO 114	Production Fundamentals
CO 205	Intercultural Communication
CO 212	Television Production I
CO 214	Elements of Film
CO 220	Film Production
	or
CO 203	Radio Production
CO 300	Persuasive Communication
CO 301	Communication Theory and Research
CO 302	Social Impact of Media
CO 312	Television Production II
CO 420	Communication and the Law
CO 500	Seminar in Communication

School of Business Restricted Electives:
6 credit hours

These credit hours of communication or journalism courses are chosen in consultation with the advisor.

Additional Electives:
21 credit hours

These credit hours are chosen in consultation with the advisor.

BA, Communication (Non-Business program)

Information is found in the catalog section for the College of Arts and Sciences.

AS, Communication (Business-related program)

Upon successful completion of 60 credit hours of the four-year BS program in communication, students may petition to receive an Associate in Science (AS) degree with a major in communication. The following specific communication/journalism coursework must be completed:

CO 100	Human Communication
CO 101	Fundamentals of Mass Communication
CO 102	Writing for the Media
CO 208	Introduction to Broadcasting
J 201	News Writing and Reporting

Nine additional credit hours of communication courses are chosen in consultation with the advisor.

Students must also complete the following core curriculum requirements:

6 credits (E105, E110): Core Competency 1
3 credits (M127): Core Competency 2
3 credits (CS107): Core Competency 3
3 credits (HS102): Core Competency 4
3 credits (EC133): Core Competency 5
3 credits: Core Competency 6

Additional credit hours are chosen in consultation with the advisor.

Minor in Communication (Business–related program; open to all majors)

A total of 18 semester hours of communication course credits must be earned in order for a student to declare the area of study as a completed minor. This work must include CO 100 Human Communication. The additional credit hours are chosen in consultation with the advisor.

Communication Certificates

The Communication department offers certificates in journalism and mass communication. Students must complete 15 credit hours to earn a certificate. Students may choose to take these courses on a matriculated or non-matriculated basis. For those students who choose the non-matriculated option, it is not necessary to apply for admission to a degree program at the university. However, if you are admitted, the credits earned may be applied toward the requirements for a degree program.

Mass Communication Certificate

This program offers options in television production, radio production, writing for media, interpersonal communication, or a combination of radio/television and film. All students are required to take 15 credit hours, including the following:

CO 100	Human Communication
CO 114	Production Fundamentals

Nine additional credit hours are chosen in consultation with the advisor.

Journalism Certificate:

Information is found in the catalog section for the College of Arts and Sciences.

Marketing Programs

The discipline of marketing investigates business practices and strategies needed to attract customers and compete effectively in a global free-market system. Although the curriculum places a greater emphasis on practices and strategies in the domestic environment, international issues are explored in most courses and in an international marketing course. Newer coverage includes the emerging impact of the Internet on channels of distribution and on promotion practices. Skills are also developed in the traditional areas of consumer analysis and marketing research.

BS, Marketing (Business program)

Marketing is the study of the processes for developing and distributing goods and services attractive to

selected customer groups. These markets may include both consumer and organizational (industrial, governmental, or non-profit) groups. An understanding of these customers results from studies of psychological and sociological perspectives and from the use of research tools. Based on this understanding, competitive strategies and distribution channels can be devised to reach the desired customers more effectively. The emergence of e-commerce has substantially modified some of the existing strategies for understanding the customer and for managing channels of distribution.

Students earning a BS in Marketing are required to complete 121 credit hours, including the Core Curriculum (37 credit hours), Core Curriculum Restricted Electives (12 credit hours), and Core Curriculum Electives/PACE requirements (12 credit hours), as well as the Business Program Core (30 credit hours). The following are in addition to the aforementioned curricular requirements:

Business Major: 18 credit hours

MK 205	Consumer Behavior
	or
MK 307	Advertising and Promotion
MK 302	Organizational Marketing
MK 326	Overview of E-Commerce
MK 413	International Marketing
MK 442	Marketing Research in the Global Environment

And one from the following:

MK 316	Sales Management
MK 321	Retail Management
MK 402	Marketing of Services
MK 515	Marketing Management

Business Restricted Electives: 12 credit hours

These additional credit hours are chosen in consultation with the advisor.

Minor in Marketing (Business program majors only)

Requirements for the minor in Marketing, for business program majors only, are nine credit hours beyond the business program core:

MK 413	International Marketing

And two from the following:

MK 205	Consumer Behavior
MK 302	Organizational Marketing
MK 307	Advertising and Promotion
MK 321	Retail Management
MK 402	Marketing of Services
MK 442	Marketing Research in the Global Environment
MK 450-454	Special Topics
MK 515	Marketing Management

Minor in Marketing (Non-Business or Business-related program majors only)

Requirements for the minor in Marketing, for Non-Business or Business-related program majors only, are the following 18 credit hours:

MK 200	Principles of Marketing
MG 210	Management and Organization

And four from the following:

MK 205	Consumer Behavior
MK 302	Organizational Marketing
MK 307	Advertising and Promotion
MK 321	Retail Management
MK 402	Marketing of Services
MK 413	International Marketing
MK 515	Marketing Management

Economics and Finance

Chair: Steven J. Shapiro, PhD

Professor Emeritus: Edward A. Downe, PhD, New School For Social Research; Ward Theilman, PhD, University of Illinois

Professors: Peter I. Berman, PhD, Johns Hopkins University; Phillip Kaplan, PhD, Johns Hopkins University; Raja Nag, PhD, University of Connecticut; Robert M. Rainish, PhD, City University of New York; Steven J. Shapiro, PhD, Georgetown University; Kamal Upadhyaya, PhD, Auburn University

Associate Professors: Wentworth Boynton, PhD, University of Rhode Island New School for Social Research; John J. Phelan, PhD, George Washington University; Armando Rodriguez, PhD, University of Texas

The department of Economics and Finance offers courses in both economics and finance. Faculty in the department have a wide range of research interests, as well as extensive experience in government policy-making, consulting, and industry.

Economics courses provide a basis for an understanding of economic structures, a wide range of domestic and international issues, and trends in the economic life of modern societies. These courses offer training in analysis of economic problems as an aid to the evaluation of economic policies. The minor in Behavioral Economics addresses the emerging importance of understanding market behavior and the heuristics and biases that impact on decision making in the context of uncertainty.

Finance, as an area of study, is designed to promote an analytic appreciation of the financial system and the financial decision-making process in which society—through its individuals, business firms, and governments—is continually engaged. In particular, the study of finance provides a structured analysis of the financial system and the financial decision-making process as determinants of the economic wealth of the individual, the business firm, and the nation. The study of finance enables the student to pursue the preparation required for a number of financial decision-making positions in government and industry, including the financial services industry. Both a BS and a minor in Finance are available for the interested student.

BS, Finance (Business program)

Students earning a BS in Finance are required to complete 121 credit hours, including the Core Curriculum (37 credit hours), Core Curriculum Restricted Electives (12 credit hours), and Core Curriculum Electives/PACE requirements (12 credit hours), as well as the Business Program Core (30 credit hours). The following are in addition to the aforementioned curricular requirements:

Core Curriculum Non-Business Restricted Elective:

EC 200 Global Economy

This course will be used to fulfill, together with QA118 and QA216, the core curriculum restricted elective credit hour requirement.

Business Major: 18 credit hours

FI	330	Investment Analysis and Management
FI	345	Financial Institutions and Markets
FI	425	International Finance
FI	429	Corporate Financial Management

And two from the following:

A	422	Intermediate Financial Accounting III
EC	340	Microeconomic Analysis
EC	341	Macroeconomic Analysis
FI	314	Principles of Real Estate
FI	327	Risk and Insurance
FI	341	Financial Decision Making

Business Restricted Electives: 12 credit hours

A	220	Intermediate Financial Accounting I
A	221	Intermediate Financial Accounting II

Six additional credit hours are chosen in consultation with the advisor.

Minor in Finance (Business program majors only)

Requirements for the minor in Finance, for business program majors only, are nine credit hours beyond the business program core:

FI 330 Investment Analysis and Management

Six additional Finance credit hours are chosen in consultation with the advisor.

Minor in Behavioral Economics (Business program majors only)

Requirements for the minor in Behavioral Economics, for business program majors only, are 9 credit hours beyond the business program core:

EC	310	Game Theory
EC	313	Behavioral Economics
EC	425	Decision-Making Economics and Uncertainty

Management

Chair: Gil Fried, JD

Professor Emeritus: Lynn W. Ellis, DPS, Pace University; Judith Neal, PhD, Yale University;

Elizabeth Van Dyke, PhD, Columbia University

Professors: Jess Boronico, PhD, University of Pennsylvania; Abbas Nadim, PhD, University of Pennsylvania; Anshuman Prasad, PhD, University of Massachusetts; Allen Sack, PhD, Pennsylvania State University; Jack Werblow, PhD, University of Cincinnati

Associate Professors: Cynthia Conrad, PhD, University of Texas; Dale M. Finn, PhD, University of Massachusetts; Gil B. Fried, JD, Ohio State University

Assistant Professors: Charles Coleman, MPA, West Virginia University; Jim Murdy, PhD, University of Connecticut

At this time, as all of society's systems — governmental, technological, societal, educational, industrial, and military, as well as business-related — are becoming increasingly sophisticated and complex, there is a growing need for skilled managers that is unrivaled historically. Contemporary managers must attend to global competition, understand complex logistical matters, maintain service quality and continuous improvement, and monitor both the internal and external business environments. In response to these needs, the management programs seek to provide students with the foundations of knowledge and skill necessary for both obtaining and advancing in professional positions within the managerial framework of both national and international corporations. The department of Management offers a diverse set of degree programs in the following general areas: Management, Management of Sports Industries, Hospitality and Tourism, and Public Administration. Minors are also available, including minors in niche areas such as Entrepreneurship.

The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program" section elsewhere in the catalog.

BS, Management (Business program)

In order to function effectively in a variety of organizational situations, administrators and managers must understand the complexities of organizational communication and the interrelationships that exist among the various functional groups that each impact on organizational welfare. This point of view is essential for managers who wish to both participate effectively with others in the administrative and managerial group and also administer and oversee activities effectively in critical areas of responsibility. The department's program in Management provides the requisite skill sets for success in this demanding and increasingly international and diverse work environment.

Students earning a BS in Management are required to complete 121 credit hours, including the Core Curriculum (37 credit hours), Core Curriculum Restricted Electives (12 credit hours), and Core Curriculum Electives/PACE requirements (12 credit hours), as well as the Business Program Core (30 credit hours). The following are in addition to the aforementioned curricular requirements:

Business Major: 18 credit hours

MG 331	Management of Human Resources
MG 350	Management of Workforce Diversity
MG 415	Multinational Management
MG 512	Contemporary Issues in Business and Society

Six additional management credit hours are chosen in consultation with the advisor.

Business Restricted Electives: 12 credit hours

Twelve additional business credit hours are chosen in consultation with the advisor.

Concentration in Management of Sports Industries (Business program)

Students majoring in Management have the option of pursuing the concentration in Management of Sports Industries. As part of the Management degree, the concentration requires a specified twelve credit hours. Nine of these credit hours are used to fulfill the Business Restricted Elective group of courses, with three additional credit hours designated in fulfillment

of the Core Curriculum Restricted Elective coursework. The degree may be completed within the standard 121 credit hour requirement.

Core Curriculum Restricted Electives:

MG 120 Development of American Sports
This course will be used, together with MA118 and QA216, to fulfill the core curriculum restricted elective credit hour requirement.

Business Restricted Electives:

MG 230 Management of Sports Industries
MG 235 Marketing and Public Relations in Sports
MG 320 Sports Industries and the Law
These courses will be used to fulfill nine credit hours of the business restricted elective requirement. Three additional credit hours of business electives are chosen in consultation with the advisor.

BS, Management of Sports Industries (Business program)

The sports industry continues to experience significant growth as a business sector of the economy. As the industry expands, so does the need for sports management specialists who are trained in business management skills and also demonstrate sensitivity to the unique features of the sports enterprise. College graduates in Management of Sports Industries can pursue careers in professional sport franchises, coliseum and arena management, ski resorts, corporate fitness centers, college sport programs, sports media industries, sporting goods merchandising, and a wide variety of other sport-related areas. Students of this program receive specialized training in areas such as sport law, marketing, finance, and event management, which are all integrated by way of the comprehensive internship requirement.

Students earning a BS in Management of Sports Industries are required to complete 121 credit hours, including the Core Curriculum (37 credit hours), Core Curriculum Restricted Electives (12 credit hours), and Core Curriculum Electives/PACE requirements (12 credit hours), as well as the Business Program Core (30 credit hours). The following are in addition to the aforementioned curricular requirements:

Core Curriculum Restricted Electives:

MG 120 Development of American Sports
This course will be used, together with QA118 and QA216, to fulfill the core curriculum restricted elective credit hour requirement.

Business Major: 18 credit hours

MG 230 Management of Sports Industries
MG 235 Marketing and Public Relations in Sports
MG 320 Sports Industries and the Law
MG 331 Management of Human Resources
MG 350 Management of Workforce Diversity
MG 415 Multinational Management

Business Restricted Electives: 12 credit hours

MG 325 Sports Facility Management
MG 430 Financial Management for Sports Administration
MG 475 Sport Event Management
MG 598 Internship

BS, Tourism and Event Management (Business program)

BS, Hotel and Restaurant Management (Business program)

These programs offer a balanced curriculum of management skills and global orientations necessary to develop leaders for careers in the world's largest industry. Classroom learning integrates practical technology applications, academic excellence, and communication skills, and is reinforced through experiential learning and professional enrichment opportunities. Students are also encouraged to participate in projects involving tourism and event professionals from the state, regional, national, and international levels.

The BS degree in either Tourism and Event Management or Hotel and Restaurant Management provides students with the knowledge and experiences necessary to successfully obtain and advance in managerial positions. Our student professional associations strive to supplement these prospects through networking, service learning, and interaction with industry leaders.

Located between New York and Boston, two of the most prominent tourism gateways, the University of New Haven's Tourism and Event Management program offers students an ideal location from which to study the industry. Furthermore, we are in proximity to several multinational businesses with which our students may partner to complete their field work (800 hours) and internship (400 hours) requirements. Each student is also required to complete a 200-hour service learning component prior to graduation.

Students earning a BS in either Tourism and Event Management or Hotel and Restaurant Management are required to complete 122 credit hours, including the Core Curriculum (37 credit hours), Core Curriculum Restricted Electives (12 credit hours), and Core Curriculum Electives/PACE requirements (12 credit hours), as well as the Business Program Core (30 credit hours). The following are in addition to the aforementioned curricular requirements:

Business Major: 18 credit hours

HTM 165	Introduction to Hospitality and Tourism
HTM 225	Restaurant Management
HTM 250	Lodging Operations
HTM 316	Hospitality Finance and Revenue Management
HTM 325	Destination Sales and Marketing
HTM 410	International Tourism

For students pursuing the BS in Tourism and Event Management

Business Restricted Electives: 12 credit hours

HTM 598	Internship

And three from the following:

HTM 227	Service Management
HTM 335	Convention and Meeting Planning
HTM 340	Tourism Policy and Planning
HTM 345	Catering and Events Management
HTM 360	Corporate Travel Planning
HTM 370	Gaming and Casino Management
HTM 430	Special Interest Tourism
HTM 450-454	Special Topics
HTM 470	Tour Design, Marketing, and Management
HTM 597	Practicum
MG 475	Sports Event Management

For students pursuing the BS in Hotel and Restaurant Management

Business Restricted Electives: 12 credit hours

HTM 598	Internship

And three from the following:

HTM 202	Hospitality Purchasing
HTM 210	Applied Techniques in the Culinary Arts
HTM 220	Pastry Making Techniques
HTM 226	Front Office Procedures
HTM 227	Service Management
HTM 235	Dining Room Management
HTM 300	Principles of Baking
HTM 304	Volume Food Production and Management
HTM 305	Wine Appreciation
HTM 315	Beverage Management
HTM 380	Resort Operations
HTM 440	International Food, Buffet, and Catering
HTM 445	Advanced Cuisine Management and Techniques
HTM 450-454	Special Topics
HTM 597	Practicum

BS, Public Administration (Business-related program)

Public administration is a rich and challenging multidisciplinary field that addresses both philosophical and social science perspectives that influence the nature of organizations. The Public Administration BS degree program is designed to develop skill sets that impact on the personal and professional effectiveness of people working in public, non-profit, voluntary, and private organizations. Graduates of the program are prepared to enter the workforce and advance to leadership positions in these organizations with a sense of commitment to social purpose, the public interest, and effective public problem-solving.

Students earning a BS in Public Administration are required to complete 121 credit hours, including the Core Curriculum.

Core Curriculum:
40 credit hours

The following courses must be completed and may be utilized in partial fulfillment of Core Curriculum requirements:

CO 100 Human Communication
This course will be used to fulfill core competency requirement 1.2.

M 109 Intermediate Algebra
This course will be used to fulfill core competency requirement 2.2.

EC 134 Principles of Economics II
This course will be used to fulfill core competency requirement 2.3.

CS 107 Introduction to Data Processing
This course will be used to fulfill core competency requirement 3.0.

HS 102 Modern Western World
This course will be used to fulfill core competency requirement 4.1.

PS 121 American Government
This course will be used to fulfill core competency requirement 4.2.

EC 133 Principles of Economics I
This course will be used to fulfill core competency requirement 5.3.

School of Business Public Administration Core:
33 credit hours

BA	100	Leadership in Business
QA	118	Business Mathematics
A	101	Introduction to Financial Accounting
A	102	Introduction to Managerial Accounting
LA	101	Business Law and the Regulatory Environment
EC	314	Public Finance and Budgeting
MK	200	Principles of Marketing
MG	210	Management and Organization
PS	122	State and Local Government Politics
PS	216	Urban Government and Politics
QA	343	Management Information Systems

Public Administration Major Requirements:
24 credit hours

PA	101	Introduction to Public Administration
PA	302	Public Administration Systems and Procedures
PA	305	Institutional Budgeting and Planning
PA	307	Urban and Regional Management
PA	404	Public Policy Analysis
PA	405	Public Personnel Practices
PA	512	Seminar in Public Administration
PA	598	Public Administration Internship

Core Curriculum Electives/PACE program:
12 credit hours

These credit hours may be used to fulfill the requirements of the School of Business PACE program; otherwise credit hours are chosen in consultation with the advisor.

School of Business Public Administration Electives:
6 credit hours

These credit hours of Public Administration courses are chosen in consultation with the advisor.

Additional Electives:
6 credit hours

These credit hours are chosen in consultation with the advisor.

AS, Management (Business program)

Upon successful completion of 61 credit hours of the four-year BS program in Management, students may petition to receive an Associate in Science (AS) degree in Management. Credit hour requirements are designed to facilitate continuance to the four-year BS degree in a business discipline.

The following specific Business Program Core credit hour coursework must be completed:

A	101	Introduction to Financial Accounting
A	102	Introduction to Managerial Accounting
FI	213	Business Finance
LA	101	Business Law and the Regulatory Environment
MG	210	Management and Organization
MG	240	Business Ethics and Diversity
MK	200	Principles of Marketing

Students must also complete the following Core Curriculum requirements:

6 credits (E105, E110): Core Competency 1.1
3 credits (CO100 or E230) Core Competency 1.2
3 credits (M109): Core Competency 2.2
3 credits (EC134): Core Competency 2.3
3 credits (QA380): Core Competency 3
3 credits (HS101 or HS102): Core Competency 4.1
3 credits (PS121 or PS122): Core Competency 4.2
3 credits (P or SO): Core Competency 5.1
3 credits (EC133): Core Competency 5.3
3 credits: Core Competency 6

The following courses, which are offered by the School of Business, must also be completed:

QA	118	Business Mathematics
QA	216	Business Statistics

Minor in Management (Non-business or Business-related program majors)

Requirements for the minor in Management, for Non-Business or Business-related program majors only, are the following eighteen credit hours:

A	101	Introduction to Financial Accounting
LA	101	Introduction to Law and the Regulatory Environment
EC	133	Principles of Economics I
MK	200	Principles of Marketing
MG	210	Management and Organizations
MG	240	Business Ethics and Diversity

Minor in Entrepreneurship (Business Program Majors)

Throughout much of the United States, many large enterprises began as a small business initiated by an entrepreneur with an idea or vision. Still today, ninety-five percent of all businesses in the United States are small businesses. Entrepreneurship and small businesses are dynamic and powerful interactive forces in these increasingly difficult economic times.

The University of New Haven offers a minor in entrepreneurship as a means of preparing students who are considering a business start-up, purchasing an existing business, or joining the family business following graduation. The minor may also provide an "intrapreneurship" foundation for students who aspire to work in big business. As such, the minor pursues a multidisciplinary approach to entrepreneurship that integrates the business disciplines with communication, negotiation, and presentation skills. Moreover, the program merges theory into practice by linking emerging academic developments with the most effective business approaches.

Requirements for the minor in Entrepreneurship, for business program majors only, are nine credit hours beyond the business program core:

MG	317	Entrepreneurship and New Business Development
MG	327	Business Planning
MG	417	Managing an Entrepreneurial Venture

Quantitative Analysis

Chair: William S. Y. Pan, PhD

Professor Emeritus: Warren J. Smith, MBA, Northeastern University

Professors: Linda R. Martin, PhD, University of South Carolina; William S. Y. Pan, PhD, Columbia University

Associate Professors: Pawel Mensz, PhD, Systems Research Institute of the Polish Academy of Sciences

Assistant Professor: Liajuan Liang, PhD, Hong Kong Baptist University

The department of Quantitative Analysis delivers coursework designed to address the development of quantitative reasoning; critical thinking; information collection, organization, and analysis; and decision-making skills. This includes coursework in applied calculus, operations research and operations management, information systems, and statistics. The department offers a minor in Quantitative Analysis for those students interested in further strengthening their skill sets in this critical area that supports the business functions.

Minor in Quantitative Analysis (Business program majors)

Requirements for the minor in Quantitative Analysis, for business program majors only, are nine credit hours in quantitative analysis courses — in addition to the Business Program Core and QA118, chosen in consultation with the advisor, and QA216.

International Business Programs

Professor: Michael Kublin, PhD, New York University

Associate Professor: Usha Haley, PhD, New York University

The School of Business International Business programs and global initiatives are overseen by a committee of faculty members who are chosen from each functional area of study in the School of Business. This ensures that these programs are cross-disciplinary in nature and that they consider emerging issues that impact on the operation of business by way of all disciplines and fields of study. The School of Business supports a minor in International Business Communication for students who are majors in business programs, as well as a minor in International Business for students of business-related or non-business programs. In addition, the School of Business supports exchange programs with other institutions across the world, including universities in China, Germany, Ireland, Spain, and India. Students interested in these study abroad initiatives should contact the School of Business Dean's office for additional information.

Minor in International Business Communication (Business program majors only)

Requirements for the minor in International Business Communication, for business program majors only, are nine credit hours beyond the business program core:

CO	205	Intercultural Communication
One from the following:		
EC	200	Global Economy
FI	425	International Finance
MK	413	International Marketing
MG	415	Multinational Management
And either		
IB	421	Operation of the Multinational Corporation
		or
IB	422	International Business Negotiations

Minor in International Business Communication (Non-Business and Business-related program majors only)

Requirements for the minor in International Business Communication, for Non-Business or Business-related program majors only, are the following eighteen credit hours:

EC	200	Global Economy
MG	210	Management and Organization
MK	200	Principles of Marketing
CO	205	Intercultural Communication
MK	413	International Marketing
IB	422	International Business Negotiations

TAGLIATELA SCHOOL OF ENGINEERING

Barry J. Farbrother, PhD, Dean
Michael A. Collura, PhD, Associate Dean

The Tagliatela School of Engineering (TSoE) offers a variety of programs in engineering and the applied sciences. These two areas encompass a number of dynamic professions in which practitioners use their knowledge, judgment, and creativity to solve some of the most important and interesting challenges facing society. These challenges and the changing face of engineering will shape the world of the twenty-first century – a world of exotic materials, new sources of energy, staggering telecommunications and computing capabilities, cybernetic factories, and needed public works. In the coming years we anticipate exciting new opportunities to emerge at the frontier between engineering and the life sciences.

Few professions can match engineering for its challenge and excitement or for its essential spirit of play. These qualities are true for each of the school's seven engineering programs – in chemical, civil, computer, electrical, general, industrial, and mechanical engineering – and also for its applied science programs in computer science, information technology, and chemistry. The rewards of an engineering career include challenging tasks, social status, and appealing working conditions and compensation. All of these are in addition to the great satisfaction of seeing your accomplishments in the real world of engineered components and systems. But a degree in engineering or the applied sciences can also lead to a wide variety of careers outside of the realm of engineering and applied science. Engineers are problem solvers, and the ability to analyze a problem and find a viable solution is a highly sought after attribute in many walks of life. Engineering skills provide an entry to business, law, medicine, politics, and entrepreneurship. Innovation will play a major role in the future, and individuals who are able to generate creative solutions to the myriad of problems that face society will be well rewarded.

Vision

The vision of the Tagliatela School of Engineering is to be the acknowledged regional leader in innovative engineering and applied science education.

Mission

The mission of the Tagliatela School of Engineering is to provide high-quality programs in an environment that supports student development, encourages faculty scholarship, and provides for the personal growth of all community members. The school provides an innovative teaching and engaged learning environment in order to maximize student success. Students are prepared for evolving professional careers by the school's fostering of a multidisciplinary perspective, instilling broad problem-solving, design, organizational, and communications skills. Graduates are prepared to practice ethical behavior, engage in career-long learning, and contribute to the betterment of society. All community members value diversity and expect that graduates will bring recognition to themselves and to the institution throughout their professional careers. In the context of our historically successful programs, we strive to maintain a continuous quality-improvement environment that:

- sustains a positive environment for the critical evaluation of new ideas,
- maintains nationally accredited programs,
- develops leading-edge curricula to meet the needs of the region,
- adapts curricula in response to technological advances,
- maximizes learning by incorporating new and effective pedagogies,

- uses appropriate classroom technology to support learning,
- provides laboratory facilities that reflect the current state of practice,
- further develops experiential learning opportunities, and
- actively partners with business, corporate, government, industrial, and community leaders.

Guiding Principles

The Tagliatela School of Engineering is committed to the guiding principles below. Members of the Tagliatela teaching/learning community:

- will exhibit respect, integrity, dignity, and professionalism,
- will assist all members of the School of Engineering – students, staff, and faculty – to achieve their full potential,
- will instill a spirit of pride, cooperation, and accountability,
- believe that personal contact with, and concern for, our students is essential,
- are committed to the total development of the student,
- recognize that in diversity there is strength, and
- understand that the Tagliatela School of Engineering is one component of the teaching/learning environment and will offer support for other programs within the university.

Organizational Structure

The Tagliatela School of Engineering consists of four operational units as follows:

- The Department of Chemistry & Chemical Engineering (Ch/ChE)
- The Department of Electrical & Computer Engineering and Computer Science (EE/CEN/CS)
- The Department of Mechanical, Civil, and Environmental Engineering (MCEE)
- The Multidisciplinary Engineering Systems Division (MES).

Further information concerning each operational unit, its mission and goals, and its faculty and its program offerings, is given below.

Professional Accreditation

The programs leading to the bachelor's degrees in Chemical, Civil, Computer, Electrical, Industrial, and Mechanical Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET). The bachelor's degree program in Computer Science is accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology (CAC/ABET).

Programs

Responsibility for the curricular content of academic programs resides with the faculty in each of the departments/divisions. Each academic program is managed by a program coordinator who is the students' primary point of contact for program-related inquiries. Each of the school's academic programs is listed under its departmental affiliation.

Undergraduate Programs

Bachelor of Science	**Operational Unit**
Chemical Engineering	Ch/ChE
Chemistry	Ch/ChE
Civil Engineering	MCEE
Computer Engineering	EE/CEN/CS
Computer Science	EE/CEN/CS
Electrical Engineering	EE/CEN/CS
General Engineering	MES
Industrial Engineering	MES
Information Technology	EE/CEN/CS
Mechanical Engineering	MCEE
Associate in Science	
Computer Science	EE/CEN/CS
Certificates	
Computer Programming	EE/CEN/CS
Logistics	MES

Graduate Programs

Master of Science

Computer Science	EE/CEN/CS
Electrical Engineering	EE/CEN/CS
Electrical Engineering (CEN option)	EE/CEN/CS
Environmental Engineering	MCEE
Executive Engineering Management	Office of the Dean
Industrial Engineering	MES
Mechanical Engineering	MCEE

Dual Degree

MBA/MS Industrial Engineering	Office of the Dean

Graduate Certificates

Civil Engineering Design	MCEE
Computer Applications	EE/CEN/CS
Computer Programming	EE/CEN/CS
Computing	EE/CEN/CS
Logistics	MES
Quality Engineering	MES

Choosing a Major

The University of New Haven is one of a small number of universities where entering freshmen are admitted directly to the engineering school. A student may be accepted into the Tagliatela School of Engineering without declaring a major in a specific engineering discipline. This is possible because the freshman year curriculum is essentially common to all engineering programs (see "Multidisciplinary Foundation for Engineering Programs" below). Students who have chosen a major should follow the recommended first-year program for the major. Students who are undecided about their choice of engineering major should choose the General Engineering degree program and follow the recommended first-year program.

Those students wishing to complete an engineering degree program other than General Engineering are strongly advised to decide on their new program by the beginning of the sophomore year. Students interested in Chemistry, Computer Science, or Information Technology are advised to choose that option in their first year.

Academic Advising

Faculty members within the Tagliatela School of Engineering take very seriously their responsibilities as academic advisors. Good academic advising helps a student make wise academic decisions and avoid course sequencing errors that can delay graduation. Each student is encouraged to meet with his or her academic advisor as soon as possible after commencement of fall semester of the freshman year and on a regular basis of at least once per semester.

All newly admitted students, including transfer students, are assigned a faculty advisor in the department responsible for their chosen degree program. Students choosing General Engineering are assigned a faculty advisor from the Division of Multidisciplinary Engineering Systems.

The Multidisciplinary Foundation for Engineering Programs

To operate effectively in today's workforce, engineers need to have a multidisciplinary perspective along with substantial disciplinary depth. The faculty of the Tagliatela School of Engineering have developed an innovative approach to achieve this perspective: *The Multidisciplinary Engineering Foundation Spiral Curriculum.* This curricular model enables the needed mix of breadth and depth, along with the desired professional skills, by providing carefully crafted, well-coordinated curricular experiences in the first two years. Full details of this program can be found under the Division of Multidisciplinary Engineering Systems (below).

University Core Curriculum

In addition to school and department requirements, students must fulfill all requirements of the university core curriculum. (See University Curricula section of the catalog.) Included within the core cur-

riculum are requirements in the humanities and social sciences. For details, see the section below under Social Science and Humanities Electives.

General Policies of the Tagliatela School of Engineering

The following definitions apply to all degree programs within the TSoE:

Transfer Credit

Transfer of credits for previous academic work is coordinated by the dean's office and assessed by program coordinators according to school policy, described in the document "Guidelines on Transfer Credit Awards." All transferred courses are the result of a determination of equivalence of course content and level. Courses for transfer claiming engineering content will normally be accepted only from ABET-accredited programs.

Transfer students whose previous academic work results in placement beyond the freshman year may be given the option of following the program worksheet in effect for upper-level students in the chosen major. Such a choice may shorten the time required to complete the degree program.

Social Science and Humanities Electives

The work of engineers and applied scientists requires creative solutions which are socially, politically, economically, culturally and aesthetically acceptable. Courses in the social sciences and humanities help to develop awareness of the needs of the global society and contribute to the ability of a scientist/engineer to communicate technical options to the broad constituencies that are affected by technical solutions. Specific courses chosen in these areas must satisfy the university core curriculum requirements.

Mathematics Electives

These are courses from the Mathematics department at the 300 or higher level. Faculty advisors should be consulted for recommendations on the mathematics electives most relevant to a student's career objectives.

Technical Electives

Technical electives are upper-level courses directly pertinent to a student's major field of study. These electives must be approved by the student's academic advisor and are usually chosen from engineering school courses. Faculty approval is important to ensure that students meet the prerequisite requirements.

Design Electives

Design electives within each program are those upper-level engineering courses that incorporate substantial design activities. Suitable courses include a (D) following the course title. These courses may also be used as technical electives.

The Co-Operative Education Program

Students in the Tagliatela School of Engineering may participate in the co-operative education program (Co-Op), which enables students to gain practical, paid work experience in an activity associated with their professional degree program. The program is an example of the School of Engineering's commitment to experiential learning, whereby students are able to gain valuable practical experience prior to graduation. For further details see "The Co-Op Program," which appears earlier in this catalog, or contact the TSoE Co-op coordinator.

Chemistry and Chemical Engineering

Chairman: W. David Harding, PhD

Professors Emeriti: Peter J. Desio, PhD, University of New Hampshire; George L. Wheeler, PhD, University of Maryland

Professors: Michael A. Collura, PhD, Lehigh University; Michael J. Saliby, PhD, SUNY at Binghamton

Associate Professors: Arthur S. Gow, III, PhD, Pennsylvania State University; W. David Harding, PhD, Northwestern University; Pauline M. Schwartz, PhD, University of Michigan

Assistant Professors: Eddie Luzik, PhD, Bryn Mawr College; Nancy Ortins Savage, PhD, The Ohio State University

Instructor: Eddie Del Valle, MS, Pontifical Catholic University of Puerto Rico

Practitioner-in-Residence: John G. Haggerty, PhD, Dartmouth College

The mission of the department of Chemistry and Chemical Engineering is to prepare a diverse student body for entrance into the chemical engineering and chemistry professions and for evolving professional careers, including graduate study and professional school.

The department offers bachelor's degree programs and minors in Chemical Engineering and Chemistry.

Degrees Offered:

BA, Chemistry

BS, Chemistry

BS, Chemical Engineering

For graduate degrees offered by this department, please refer to the UNH graduate catalog.

Jacob Finley Buckman Endowed Chair and Scholarships

The Jacob Finley Buckman Endowed Chair of Chemistry and Chemical Engineering was established in 1981 by Mrs. Clarice Buckman of New Haven in memory of her late husband, Jacob Finley Buckman, the cofounder of Enthone Corporation. The Clarice Buckman Scholarships are awarded to juniors majoring in Chemical Engineering or Chemistry.

Chemical Engineering

Chemical engineers are creative problem solvers. They apply the fundamental principles of chemistry, physics, biology, mathematics, and economics to the solution of practical problems and to the search for new knowledge. Traditionally, chemical engineers develop, design, optimize, and operate processes that convert material and energy resources into new or improved products. It was practitioners of this discipline who developed the technological infrastructure for industries such as chemicals, petroleum products, plastics, textiles, pharmaceuticals, and food processing.

Chemical engineers are at the forefront in implementing emerging technologies such as bio-processing and biomaterials and nanotechnology. Chemical engineers are also concerned with the critical areas of resource depletion, energy conservation, pollution prevention and control, improved control of processes, and enhanced productivity. The major has also proven to be an excellent background for the study of law, medicine, or business.

Mission and Objectives

The mission of the Chemical Engineering program is to prepare a diverse student body for entrance into the chemical engineering profession and for evolving professional careers. The following four program objectives have been set to achieve the program's mission:

- To graduate students who have the technical knowledge and professional skills necessary for the current practice of engineering.
- To prepare students for technical careers which require a high level of interaction and communication with others and sensitivity to the broad social scope of engineering problems.
- To prepare graduates to apply an organized approach to competently address problems and opportunities through careful problem formulation, critical analysis of inputs, creative solutions, and the ability to learn what is needed to solve the complex problem.
- To assure that students have a firm understanding of the terminology, techniques, and methods employed by chemical engineers.

Based on the program objectives, ten program outcomes have been established:

- Students can demonstrate the understanding of and an ability to apply concepts in basic science and mathematics and have a working knowledge of advanced chemistry.
- Students can demonstrate the ability to design and conduct experiments, analyze data obtained, assess overall results, and make recommendations regarding the outcome of their work.
- Students can demonstrate proficiency in the use of computer tools typical of those used in the process industries for research, development, design, and

operation activities.

- Students can demonstrate the ability to function as an integral member of a multidisciplinary team.
- Students are aware that solutions to technical problems have wide-ranging effects on society. They can demonstrate the ability to incorporate consideration of such effects into their solutions.
- Students can demonstrate the ability to effectively communicate technical ideas to a variety of audiences.
- Students can demonstrate the ability to develop solutions to open-ended problems which achieve balance among competing constraints.
- Students can demonstrate the ability to apply an engineering approach to the solution of problems.
- Students can demonstrate the ability to think creatively and to extend their knowledge through independent learning.
- Students can demonstrate the ability to apply the concepts of balances, rate, and equilibrium relationships and of process/product/equipment analysis and design.

Achievement of these four objectives and ten outcomes is assessed by a variety of means, including course evaluations, exit surveys, alumni surveys, and employer surveys.

BS, Chemical Engineering

Program Coordinator: W. David Harding, PhD

The BS in Chemical Engineering degree is accredited by the American Institute of Chemical Engineers (AIChE) and by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET). The Chemical Engineering program is challenging, but for those genuinely interested it develops the depth of knowledge required to embark on a fascinating and satisfying professional career in industry or government or to continue study at the graduate level.

The freshman year in Chemical Engineering is like that of the other engineering disciplines (see "Multidisciplinary Foundation for Engineering Programs"). Chemical Engineering students take EAS 120, Chemistry with Application to Biosystems, during the freshman year.

The first chemical engineering course, taken in the sophomore year, is the beginning of a well-integrated sequence that builds on the multidisciplinary foundation. Each chemical engineering course contributes uniquely to the development of skills in problem solving, communication, computer usage, and engineering design. Several common themes weave throughout these courses, including safety, concern for the environment, and practical application of knowledge to real-world problems. A comprehensive laboratory experience contributes to these educational objectives through the use of modern, industrial-type data acquisition and control instruments and computers on pilot-scale process equipment. Comprehensive design projects in the senior year enable the student to synthesize and focus the entire curriculum. Several engineering or science electives allow flexibility in the program, to include areas of special interest.

Students in the Chemical Engineering program satisfy the university core competency requirements through specified courses and elective choices. University core competency categories are indicated in the list below for such electives.

Required Courses

(130 credits total including freshman year)

Freshman Year

CH	115	General Chemistry I
CH	117	General Chemistry I Laboratory
E	105	Composition
E	110	Composition and Literature
EAS	107	Introduction to Engineering
EAS	109	Project Planning & Development
EAS	112	Methods of Engineering Analysis
EAS	120	Chemistry with Applications in Biosystems
FE	001	Freshman Experience (required for all first-time day-division freshmen)
M	117	Calculus I
M	118	Calculus II

Elective from Core Competency 5.1

Sophomore Year

CH	201-202	Organic Chemistry I and II
CH	203	Organic Chemistry I Laboratory
CM	220	Process Analysis
EAS	211	Introduction to Modeling of Engineering Systems
EAS	213	Materials in Engineering Systems
EAS	224	Fluid-Thermal Systems
M	203	Calculus III
M	204	Differential Equations
PH	150	Mechanics, Heat, and Waves with Laboratory
PH	205	Electromagnetism and Optics with Laboratory

Junior Year

CH	331-332	Physical Chemistry I and II
CH	333-334	Physical Chemistry I and II Laboratory
CM	310	Transport Operations I with Laboratory
CM	311	Chemical Engineering Thermodynamics
CM	321	Reaction Kinetics and Reactor Design
CM	410	Transport Operations II with Laboratory
EAS	230	Fundamentals and Applications of Analog Devices
EAS	232	Project Management and Engineering Economics

Elective from Core Competency 1.2
Elective from Core Competency 5.2

Senior Year

CM	401	Mass Transfer Operations
CM	420	Process Design Principles
CM	421	Plant and Process Design
CM	431	Process Dynamics and Control with Laboratory
EAS	415	Professional Engineering Seminar
HS	101	Foundations of the Western World
		or
HS	102	The Western World in Modern Times

Elective from Core Competency 6
Plus 9 credit hours of engineering or science electives

Students who wish to concentrate in a particular area should select a cluster of elective courses which match their interests. Examples of some popular clusters are:

Biochemical Engineering Applications:

BI	253	Biology for Science Majors with Laboratory I
BI	301	Microbiology
BI	461	Biochemistry

Biotechnology Applications:

BI	253	Biology for Science Majors with Laboratory I
BI	301	Microbiology
BI	308	Cell Biology
BI	311	Molecular Biology

Environmental Engineering Applications:

CE	315	Environmental Engineering
CE	404	Water and Wastewater Engineering
CM	521	Air Pollution Fundamentals

Occupational Safety and Health Applications:

SH	100	Safety Organization and Management
SH	110	Accident Conditions and Controls
SH	200	Elements of Industrial Hygiene
SH	400	Occupational Safety and Health Legal Standards

In some cases, students may wish to take courses beyond those required for the degree, to gain depth in an area of interest.

Minor in Chemical Engineering

Students who wish to earn a minor in Chemical Engineering should complete EAS 224 and five courses in Chemical Engineering, including the following:

EAS	224	Fluid-Thermal Systems
CM	220	Process Analysis
CM	310	Transport Operations I with Laboratory

CM 321 Reaction Kinetics and Reactor Design
Plus two additional chemical engineering (CM) courses.

Chemical Engineering Club

The Chemical Engineering Club has ties to the American Institute of Chemical Engineers (AIChE). The club provides students the opportunity to socialize, meet chemical engineers working in the area, visit process plants, and participate in community projects.

Chemistry

Chemists are concerned with the structure and analysis of matter and the changes that matter undergoes. Today's chemists are solving problems and developing new substances with the increasing use of laboratory instruments. Many of these instruments are interfaced with computers for rapid data analysis and display.

Careers for chemists in today's market include the rapidly developing fields of instrumentation; computers; energy; environment; forensics; medicine; biochemistry and biotechnology; safety and health; pharmaceutical, product, and equipment development; chemical engineering; plastics and polymers; synthetic fibers; industrial chemistry; technical sales and services; and management.

Objectives

The Chemistry program has the following educational objectives:

- To provide a strong background in theoretical chemical principles and laboratory practice.
- To develop problem-solving and critical-thinking skills.
- To develop the ability to communicate effectively.
- To provide pertinent experience with chemical instrumentation.

BS, Chemistry

Program Coordinator: Michael J. Saliby, PhD

The BS in Chemistry program consists of most of the courses recommended by the American Chemical Society (ACS) and provides a rigorous background well-suited to those students who will pursue graduate studies in chemistry. The program is also highly recommended for premedical students. The program contains six technical electives. By careful selection of courses, these electives allow the student to develop a cluster in a related field such as biotechnology, biochemistry, computer science, environmental studies, or an engineering field.

Students majoring in Forensic Science may also earn a BS degree in Chemistry by taking 12 credits in addition to those required for the BS degree in Forensic Science.

Required Courses

Students majoring in Chemistry must complete the following courses for a total of 123-126 credits:

Freshman Year

CH	115-116	General Chemistry I and II
CH	117-118	General Chemistry I and II Laboratory
E	105	Composition
E	110	Composition and Literature
M	117-118	Calculus I and II
PH	150	Mechanics, Heat, and Waves with Laboratory
FE	001	Freshman Experience (required for all first-time day-division freshmen)

Plus one elective from the Core Competency 3 Option A

Sophomore Year

CH	201-202	Organic Chemistry I and II
CH	203-204	Organic Chemistry I and II Laboratory
CH	211	Quantitative Analysis with Laboratory
CH	221	Instrumental Methods of Analysis with Laboratory
HS	101	Foundations of the Western World
		or
HS	102	The Western World in Modern Times
M	203	Calculus III
PH	205	Electromagnetism and Optics with Laboratory

Plus one computer science (CS) elective or an

approved restricted elective*

Plus one elective from Core Competency 5.1

Junior Year

CH 331-332	Physical Chemistry I and II
CH 333-334	Physical Chemistry I and II Laboratory
CH 341	Synthetic Methods in Chemistry

Plus two technical electives*, one advanced chemistry elective, one elective from Core Competency 1.2, one elective from Core Competency 2.3, one elective from Core Competency 5.2, and one elective from Core Competency 6

Senior Year

CH 411	Chemical Literature
CH 412	Seminar
CH 451	Thesis with Laboratory or advanced chemistry or chemical engineering course
CH 501	Advanced Organic Chemistry
CH 521	Advanced Inorganic Chemistry
CH 599	Independent Study or advanced chemistry or chemical engineering course

Plus four technical electives* and one biology or mathematics elective from Core Competency 2

* To be chosen in consultation with student's advisor

Teaching Chemistry

Students interested in earning a teaching certificate in secondary education in chemistry may enter the graduate program at UNH. The BS or BA in Chemistry is the best choice for a major for those planning to teach at the secondary level, but other related majors are also acceptable. Students interested in teaching science at the middle school level need a variety of science courses, including chemistry. Please contact the Education department for additional information.

Minor in Chemistry

To obtain a minor in Chemistry, students must complete 23-24 credit hours, including the following courses:

Required Courses:

CH 115-116	General Chemistry I and II
CH 117-118	General Chemistry I and II Laboratory
CH 201-202	Organic Chemistry I and II
CH 203-204	Organic Chemistry I and II Laboratory
CH 211	Quantitative Analysis with Laboratory
CH 221	Instrumental Methods of Analysis with Laboratory

(A CH 300-level or above course may be substituted for CH 221.)

Forensic Science and Chemistry Club

The Forensic Science and Chemistry Club is a student affiliate of the American Chemical Society (ACS). The club is open to all students, and all chemistry and forensic science majors are encouraged to join. Club activities include field trips, community and university service projects, films, group discussions, and social activities.

Electrical & Computer Engineering and Computer Science

Chairman: Ali Golbazi, PhD

Professors Emeriti: Edward T. George, DEng, Yale University; Gerald J. Kirwin, PhD, Syracuse University; Kantilal K Surti, PhD, University of Connecticut; Darrell Horning, PhD, University of Illinois

Professors: Bouzid Aliane, PhD, Polytechnic Institute of New York; Tahany Fergany, PhD, University of Connecticut; Alice E. Fischer, PhD, Harvard University; Andrew J. Fish. Jr., PhD, University of Connecticut; Roger G. Frey, PhD, JD, Yale University; Ali Golbazi, PhD, Wayne State University; Bijan Karimi, PhD, Oklahoma State University; Daniel C. O'Keefe, PhD, Worcester Polytechnic Institute

Associate Professors: Norman Hosay, PhD, University of Wisconsin; David W. Eggert, PhD, University of South Florida; William R. Adams, PhD, University of Connecticut; Barun Chandra, PhD, University of Chicago

Degrees Offered:

BS, Computer Engineering

BS, Computer Science

BS, Electrical Engineering

BS, Information Technology

Five-year BS/MS in Electrical and Computer Engineering

AS, Computer Science

For graduate degrees offered by this department, please refer to the UNH graduate catalog.

Mission:

The mission of the department is to prepare students from diverse backgrounds for professional practice and continued growth in electrical engineering, computer engineering, computer science, and information technology.

Electrical & Computer Engineering

The Electrical and Computer Engineering curriculums are designed to provide students with the skills and the basic scientific background needed to become proficient in today's technology and to keep abreast of future developments in the electrical and computer engineering profession.

Recognizing the changing trend in engineering education, the Electrical and Computer Engineering programs have adopted a multidisciplinary approach for teaching and learning by incorporating a series of newly developed project-oriented courses based on the spiral curriculum.

The early part of the programs emphasizes electrical and computer engineering skills that form the background for the upper-level elective and design courses. Physics, chemistry, mathematics, computer programming, basic engineering science, and general education courses supplement the required and elective electrical and computer engineering courses.

The upper-level electrical and computer engineering coursework provides areas of concentration for in-depth study. Students can choose additional technical electives from outside the area of concentration to provide more breadth of knowledge.

To influence our society's evolution, the electrical and computer engineer must acquire an understanding of our society, our cultural heritage, and the human condition. The engineer must communicate ideas to other engineers and to the public. The Electrical and Computer Engineering programs enable this via liberal and humanistic studies. The university core requirements allow students to expand their cultural and intellectual horizons by exposing them to the humanities and social sciences. Students learn written and oral communication skills in the core courses as well as in multidisciplinary engineering-science courses in the freshman and sophomore years. Students apply these skills in the humanities and social science courses as well as in laboratory/design courses in their major.

An important feature of the electrical and computer engineering curriculum is the design experience. Our students develop the ability to analyze appropriate models, conduct empirical tests, gather relevant information, interpret empirical tests, develop appropriate models, develop alternative solutions, formulate problems, and synthesize in our laboratory sequence. This sequence of courses takes the student in gradual steps from a well-structured laboratory experiment in the sophomore year to an open-ended design project in the senior year. This allows students to gain practical experience in engineering design.

Internship Requirement

The internship program is intended to enrich the academic experience of our undergraduate students, providing exposure to and participation in a working engineering environment. Each internship must involve a partnership consisting of the student, faculty, and employers/organizations to provide each student intern with an optimal experience. A minimum of 300 hours performing relevant engineering duties is required prior to graduation. Students must complete

60 credit hours toward the bachelor's degree in Electrical or Computer Engineering before an internship is attempted.

The internship carries no credit for the degree; however, the requirement may be satisfied utilizing a co-op position, summer employment, and part-time or full-time positions that are approved by the student's employer and by the department/internship coordinator as relevant to the goals of the internship experience. A waiver (or substitution) of the internship requirement may be granted for students who are employed in the field, subject to a formal review by the department/internship coordinator. The student's request for such a waiver must be initiated one year prior to the anticipated graduation date.

BS, Computer Engineering

Program Coordinator: Bijan Karimi, PhD

The BS in Computer Engineering degree is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET).

Computer engineering is concerned with design and implementation of digital systems such as computer systems, computer-based control systems, interfaces between digital and analog systems, interfaces between hardware and software, and control software for embedded computer systems. This program spans the disciplines of both electrical engineering and computer science and can be described as bridging the area between the two.

Computers are used in almost every device or system manufactured today, from large multi-computer systems to cell phones and credit card reading devices. In addition, they are used in signal processing applications, speech recognition, medical imaging, and picture and data communication. The Internet is possible in part because of advances made in computing machines and data communication by people working in the capacity of computer engineers. Careers for computer engineers are found in all phases of the production of these devices and systems, from design, manufacturing, and maintenance to marketing and sales.

(For more details on the Computer Engineering program and the internship requirement, please see "Electrical & Computer Engineering" earlier in this section.)

Educational Objectives

The educational objectives of the Computer Engineering program prepare students for professional practice and lifelong learning. Program graduates will:

- Demonstrate high-quality performance as computer engineers in industry who have a strong theoretical background for pursuing graduate studies.
- Demonstrate the ability for leadership and understanding of human relationships in general.
- Be able to function as innovators, entrepreneurs, and problem solvers in industry or academia.
- Demonstrate the ability to function as members of multidisciplinary teams or as team leaders and secure high-level managerial positions in their discipline.
- Demonstrate awareness of, care about, and be able to deal with societal and global issues such as environmental and ethical concerns.

Design and problem solving are the central themes of this program. It combines the engineering and hardware approach of electrical engineering with the knowledge of computing structures and the algorithmic approach of computer science. The first two years of the program concentrate on basic science, mathematics, and engineering. The last two years are comprised of courses in digital systems, computer systems, networks, electrical systems, and design of software systems. Three electives in the fourth year give the student an opportunity to explore a hardware- and/or software-oriented program. The final year includes a yearlong senior design project in which the student designs a device, system, or software application. Depending on the student's interests, the project can be hardware- and/or software-oriented. Industry-based projects are encouraged. The program also has a general education component in communications, economics, and the humanities needed to create a well-rounded professional.

Required Courses

Students must complete a total of 128 credit hours

to earn the Bachelor of Science degree in Computer Engineering. Humanities or social science electives must be selected to fulfill the core curriculum requirements of the university, and students must complete the internship requirement.

Technical electives are 300-level or higher CS or EE courses that fit into the student's plan of study and are approved by the academic advisor. One technical elective may be taken outside the specified areas with the approval of the academic advisor. In the final year of study the student takes a two-semester senior design sequence, CEN 457 and CEN 458. In the first semester the student selects a topic, completes a literature search, and commences the design process. In the second semester, the student completes the design, implements the project, and presents the results.

The following list shows the sequence of courses that a student should follow to complete the program in four years.

Freshman Year

CH	115	General Chemistry I
CH	117	General Chemistry I Laboratory
CS	110	Introduction to C Programming I
CS	166	Discrete Mathematics for Computing
E	105	Composition
E	110	Composition and Literature
EAS	107	Introduction to Engineering
EAS	112	Methods of Engineering Analysis
FE	001	Freshman Experience (required for all first-time day-division freshmen)
M	117	Calculus I
M	118	Calculus II
PH	150	Mechanics, Heat, and Waves with Laboratory

Sophomore Year

CS	210	Java Programming
EAS	211	Introduction to Modeling of Engineering Systems
EAS	230	Fundamentals and Applications of Analog Devices
EE	155	Digital Systems I
EE	235	Analog Circuits
EE	256	Digital Systems Laboratory
EE	257	Analog Circuits Laboratory
HS	102	The Western World in Modern Times
M	203	Calculus III
M	204	Differential Equations
PH	205	Electromagnetism and Optics with Laboratory

Junior Year

CEN	398	Computer Engineering Internship
CS	226	Data Structures Using Collections
CS	320	Operating Systems
E	300	Writing Proficiency Examination
EE	247	Electronics I
EE	302	Systems Analysis
EE	320	Random Signal Analysis
EE	356	Digital Systems II
EE	371	Computer Engineering
EE	410	Networking I
EE	472	Computer Architecture
EE	475	Embedded Systems, Interfaces, and Buses

Senior Year

CEN	457	Design Preparation
CEN	458	Electrical Engineering Design Laboratory
EAS	232	Project Management and Engineering Economics
EAS	415	Professional Engineering Seminar
EC	133	Principles of Economics I

Plus three technical electives, one literature/philosophy elective, one social science elective, and one art/music/theatre elective

Minor in Computer Engineering

A student may obtain a minor in Computer Engineering by completing the following courses:

CS	166	Discrete Mathematics for Computing
CS	226	Data Structures Using Collections
EAS	230	Fundamentals & Applications of Analog Devices
EE	155	Digital Systems I
EE	247	Electronics I
EE	256	Digital Systems Laboratory
EE	371	Computer Engineering I

Student Societies

The Electrical and Computer Engineering programs sponsor a student section of the Institute of Electrical and Electronics Engineers. This organization supports visiting lecturers, educational workshops, field trips to surrounding industrial sites, and social events.

Eta Kappa Nu, the national honor society for electrical and computer engineers, is represented by the Zeta Rho Chapter at the University of New Haven. This society exists to honor superior students and to encourage high scholastic achievement.

BS, Computer Science

Program Coordinator: Alice E. Fischer, PhD

The bachelor's degree program in Computer Science is nationally accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology (CAC/ABET).

The goals of the computer science program are to inform, challenge, and train our diverse student body for a constantly changing world of technology. Upon graduation, a strong student will be prepared for graduate study in computer science, and every student should:

- have acquired a solid body of knowledge and understanding of computer hardware, software, and theory, as defined by the Association for Computing Machinery (ACM) curriculum guidelines,
- be able to communicate technical material in written English,
- be able to design and implement a system for a real application,
- have developed a professional level of skill in programming, both individually and as part of a team,
- be ready for employment at a professional level in industry,
- be aware of the legal and ethical issues that confront the field of computing,
- know the rights and obligations of the practicing computing professional, and
- be prepared for lifelong learning in our field.

A typical initial job title might be applications programmer or software engineer. Later titles might be system analyst, team leader, or software consultant. Areas of application range from database management to highly technical design projects.

The Computer Science program includes instruction in several programming languages and a strong base in mathematics. Intermediate courses include the study of systems, hardware, and theory. Advanced courses are available in various application areas. With the help of an advisor, each student will also choose some area of interest outside computer science and pursue a specialization in that field. It is often easy to extend this specialization into a minor in the selected field. Popular areas include mathematics, engineering, business, social sciences, and multimedia.

Required Courses

A total of 126 credit hours, including the university core curriculum, is required for the degree of Bachelor of Science in Computer Science.

Freshman Year

CS	110	Introduction to C Programming
CS	166	Discrete Mathematics for Computing
CS	210	Java Programming
EAS	107P	Introduction to Engineering
E	105	Composition
E	110	Composition and Literature
FE	001	Freshman Experience (required for all first-time day-division freshmen)
HS	101	Foundations of the Western World
		or
HS	102	The Western World in Modern Times
M	117	Calculus I
M	118	Calculus II

Social Interaction core elective

Sophomore Year

CS	212	Intermediate C Programming
CS	214	Computer Organization
CS	215	Introduction to Databases
CS	226	Data Structures with Collections
EE	155	Digital Systems I
M	203	Calculus III

Two semesters of a Laboratory Science sequence

Aesthetic Responsiveness core elective
Global Perspective core elective

Junior Year

CS	247	Networking Essentials and Technologies
CS	320	Operating Systems
CS	326	Data Structures and Algorithms
CS	590	Internship
E	220	Writing for Business & Industry
		or
E	225	Technical Writing & Presentation
E	300	Writing Proficiency Exam
EAS	345	Applied Engineering Statistics

Computer Science elective
Laboratory Science elective
Citizenship core elective
Two specialization electives

Senior Year

CS	416	Social and Professional Issues in Computing
CS	428	Object-Oriented Design
CS	536	The Structure of Programming Languages
CS	547	Systems Programming

Two senior-level Computer Science electives
Global Perspective core elective
One technical elective
One technical or specialization elective
One specialization elective

In addition, or as part of the preceding requirements, each student must complete a substantial individual programming project and a team project.

AS, Computer Science

Program Coordinator: Alice E. Fischer, PhD

This two-year associate's program is designed for part-time students and for those who wish to enter the job market as soon as possible. All credits can be applied toward the corresponding BS degree in Computer Science. It is recommended, however, that students enroll in the bachelor's degree program when they begin the associate's program in order to guarantee that all AS credits can be applied toward the BS. A total of 61 credit hours is required for the awarding of the AS in Computer Science.

Required Courses

Program Requirements: 120 credit hours

Freshman Year

CS	110	Introduction to C Programming
CS	166	Discrete Mathematics for Computing
CS	210	Java Programming
E	105	Composition
E	110	Composition and Literature
EAS	107P	Introduction to Engineering
FE	001	Freshman Experience (required for all first-time day-division freshmen)

History or Citizenship core elective

M	117	Calculus I
M	118	Calculus II

Social Interaction or Global Perspective core elective

Sophomore Year

CS	212	Intermediate C Programming
CS	214	Computer Organization
CS	215	Introduction to Databases
CS	226	Data Structures with Collections
CS	247	Networking Essentials and Technologies
EE	155	Digital Systems I

Two semesters of a Laboratory Science sequence
Aesthetic Responsiveness core elective

Minor in Computer Science

Students may minor in Computer Science by completing 18 credit hours of computer science courses. Those considering a minor in Computer Science should seek guidance from the CS undergraduate coordinator as early as possible. Students must complete the following courses:

CS	210	Java Programming
CS	212	Intermediate C Programming
CS	226	Data Structures using Collections
CS	326	Data Structures and Algorithms

Two CS electives at the 350 level or higher.

A Computer Science or Computer Engineering student is ineligible to earn a minor in Information Technology.

Computer Programming Certificate

This certificate is designed for individuals who require rapid entry into the job market as a computer programmer. Candidates do not need to matriculate into an associate's or bachelor's degree program at the university but may enroll directly as a student pursuing a certificate. Credits earned toward the certificate may be applied toward the requirements for a degree program at a later date. Students must complete 21 credit hours including the following courses:

CS	110	Introduction to C Programming
CS	166	Discrete Mathematics for Computing
CS	210	Java Programming
CS	212	Intermediate C Programming
CS	226	Data Structures using Collections

Plus two CS sophomore electives

BS, Electrical Engineering

Program Coordinator: Ali Golbazi, PhD

The bachelor's degree program in Electrical Engineering is nationally accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET).

Electrical engineering is concerned with the analysis, design, development, and operation of electrical and electronic systems. Examples of these systems include communication, fiber optics, data processing, power generation and distribution, control, and instrumentation. Digital circuits and computers are important and integral parts of such systems and are widely used by electrical engineers in their design and development. The electrical engineer is also concerned with the devices that make up systems such as transistors, integrated circuits, rotating machines, antennas, lasers, and computer-memory devices.

(For more details on the Electrical Engineering program and the internship requirement, please see "Electrical & Computer Engineering" earlier in this section.)

Educational Objectives

The educational objectives of the program, based on the ABET Engineering Criteria and the program mission, are to produce graduates who:

- Can pursue professional practice in initial electrical engineering positions or continue into graduate study either in electrical engineering or related fields.
- Can adopt the analytical skills and the broad foundation in general education and liberal arts to allow for lifelong learning, providing the basis for leadership in their chosen field of endeavor.
- Can communicate ideas effectively and participate in multidisciplinary teams to solve technical problems and benefit humankind.
- Are responsible and aware of the broad issues relating to professional ethics, safety, and the environment.

Required Courses

Students must complete a total of 125 credit hours for a Bachelor of Science degree in Electrical Engineering, including the requirements for the freshman year listed earlier and the internship requirement. Humanities or social science electives must be selected to fulfill the core curriculum requirements of the university and ABET.

Technical elective courses in the BSEE program must be selected from upper-level offerings (third or fourth year) under the guidance and approval of the student's academic advisor. At least three must be electrical or computer engineering courses.

In the final year of study the student takes a senior design sequence, EE 457 and EE 458, over two semesters. In the first semester the student selects a topic and does a literature search and a preliminary design. In the second semester, the student completes the design, implements the project, and presents the results.

Freshman Year

CH	115	General Chemistry I
CH	117	General Chemistry I Laboratory
E	105	Composition
E	110	Composition and Literature
EAS	107	Introduction to Engineering
EAS	109	Project Planning and Development
EAS	112	Methods of Engineering Analysis
FE	001	Freshman Experience (required for all first-time day-division freshmen)

HS	102	The Western World in Modern Times
M	117	Calculus I
M	118	Calculus II
PH	50	Mechanics, Heat, and Waves with Laboratory

Sophomore Year

CS	110	Introduction to C Programming I
EAS	211	Introduction to Modeling of Engineering Systems
EAS	230	Fundamentals and Applications of Analog Devices
EE	155	Digital Systems I
EE	235	Analog Circuits
EE	256	Digital Systems Laboratory
EE	257	Analog Circuits Laboratory
M	203	Calculus III
M	204	Differential Equations
PH	205	Electromagnetism and Optics with Laboratory

Plus one social science elective

Junior Year

E	300	Writing Proficiency Examination
EC	133	Principles of Economics I
EE	247	Electronics I
EE	302	Systems Analysis
EE	320	Random Signal Analysis
EE	348	Electronics II
EE	349	Electronics Design Laboratory
EE	355	Control Systems
EE	371	Computer Engineering
EE	398	Electrical Engineering Internship

Plus one mathematics elective and one technical elective

Senior Year

EAS	232	Project Management and Engineering Economics
EAS	415	Professional Engineering Seminar
EE	445	Communication Systems
FE	457	Design Preparation
EE	458	Electrical Engineering Design Laboratory
EE	461	Electromagnetic Theory

Plus three technical electives, one art/music/theatre elective, and one literature or philosophy elective

Minor in Electrical Engineering

A student may obtain a minor in Electrical Engineering by completing the following courses:

EAS	230	Fundamentals and Applications of Analog Devices
EE	155	Digital Systems I
EE	202	Network Analysis
EE	235	Analog Circuits
EE	256	Digital Systems Laboratory
EE	257	Analog Circuits Laboratory

Plus one of the following sequences:

EE	247	Electronics I and
EE	348	Electronics II
		or
EE	371	Computer Engineering and
EE	356	Digital Systems II
		or
EE	302	Systems Analysis and
EE	355	Control Systems

Student Societies

The Electrical and Computer Engineering programs sponsor a student section of the Institute of Electrical and Electronics Engineers. This organization supports visiting lecturers, educational workshops, field trips to surrounding industrial sites, and social events.

Eta Kappa Nu, the national honor society for electrical and computer engineers, is represented by the Zeta Rho Chapter at the University of New Haven. This society exists to honor superior students and to encourage high scholastic achievement.

Seamless Five-Year BS/MS in Electrical and Computer Engineering

The combined BS/MS path affords the opportunity to qualified recipients of Bachelor of Science in Electrical Engineering (BSEE) and Bachelor of Science in Computer Engineering (BSCEN) degrees to continue on to the Master's Degree in Electrical Engineering (MSEE) program and complete both degree programs in five years. Qualified students with UNH BSEE and BSCEN degrees will make a smooth transition into the MSEE degree program with no

application fee and minimal paperwork. Once on this path, students will be allowed to register for at least two graduate courses or two cross-listed courses in their senior year. While these courses will fulfill the undergraduate degree requirements, they will also be used to waive certain requirements (up to six credits) of the MSEE degree.

BS, Information Technology

Program Coordinator: David W. Eggert, PhD

The goals of the bachelor's degree program in Information Technology (IT) are to inform, challenge, and train our diverse student body for a constantly changing world of technology. At graduation, every student should:

- have acquired a solid body of knowledge and understanding of current technical concepts and practices in the core information technologies,
- be able to design effective and usable IT-based solutions and integrate them into a user's environment, both individually and as part of a team,
- be able to assist in the creation of an effective project plan,
- be able to communicate effectively and efficiently with clients, users, and peers, both orally and in writing,
- demonstrate independent critical thinking and problem-solving skills,
- have acquired a solid body of knowledge and understanding of computer hardware and software,
- be sensitive to human/computer interface design issues,
- be aware of the legal and ethical issues that confront the field of computing,
- know the rights and obligations of the practicing computing professional,
- be prepared for lifelong learning in the field.

The program consists of a common core that exposes students to a wide range of computing and technology topics, including the study of databases, hardware, networks, programming, and human/computer interaction. Advanced courses are selected from one of two tracks: *Web and Database Development* or *Network Administration and Security*. A student also must complete a specialization in another discipline. Suggested specializations include criminal justice, management, marketing, international business, art, and multimedia.

Areas of application include webpage design and development, database administration and maintenance, and network development and administration. Typical initial job titles might be web developer, network technician, applications developer, and network security technician. With several years of experience, job titles might be website administrator, network administrator, database administrator, and security manager.

A total of 122 credit hours, including the university core curriculum, is required for the BS in Information Technology. Students must complete one of two tracks: *Web and Database Development* or *Network Administration and Security*. Substitutions for track courses are permitted with the advisor's approval.

Freshman Year

CS	110	Introduction to C Programming
CS	166	Discrete Mathematics for Computing
CS	210	Java Programming
E	105	Composition
E	110	Composition and Literature
EAS	107P	Introduction to Engineering
EC	133	Principles of Economics I
		or
EC	134	Principles of Economics II
FE	001	Freshman Experience (required for all first-time day-division freshmen)
HS	101	Foundations of the Western World
		or
HS	102	The Western World in Modern Times
M	115	Pre-Calculus

Aesthetic Responsiveness core elective

Sophomore Year

CS	214	Computer Organization
CS	215	Introduction to Databases
CS	350	Human-Computer Interaction
CO	100	Human Communication
EAS	109	Project Planning and Development

EAS 232 Project Management and Engineering Economics
M 228 Elementary Statistics
Laboratory Science core elective
Social Interaction core elective

Network Administration and Security Track
CS 247 Networking Essentials and Technologies

Web and Database Development Track
CS 226 Data Structures with Collections

Junior Year
CS 320 Operating Systems
CS 590 Internship
E 220 Writing for Business & Industry
or
E 225 Technical Writing & Presentation
E 300 Writing Proficiency Exam
Business restricted elective
Citizenship core elective
Two specialization electives
Global Perspective core elective

Web and Database Development Track
CS 247 Networking Essentials and Technologies
MM 301 Introduction to Multimedia
MM 312 Website Creation

Network Administration and Security Track
CS 452 Script Programming for Network Administration
CS 445 Network Administration
One technical elective

Senior Year
CS 416 Social and Professional Issues in Computing
CS 504 Senior Project
or
CS 428 Object-Oriented Design
IE 414 Engineering Management
Global Perspective core elective
Two specialization electives
One technical elective

Web and Database Development Track
CS 441 Web and Database Development
CS 522 Advanced Databases
One technical elective

Network Administration and Security Track
CS 446 Introduction to Computer Security
Two CJ or CS restricted electives

Minor in Information Technology

Students may minor in Information Technology by completing 18 credit hours of computer science courses. Those considering a minor in Information Technology should seek guidance from the Information Technology undergraduate coordinator as early as possible. Students must complete the following courses:

CS 110 Introduction to C Programming
CS 214 Computer Organization
CS 215 Introduction to Databases
CS 247 Networking Essentials and Technologies
Plus two CS electives (excluding CS 107)

Mechanical, Civil, and Environmental Engineering

Chairman: John Sarris, PhD

Professors Emeriti: M. Hamdy Bechir, ScD, Massachusetts Institute of Technology; Oleg Faigel, PhD, Moscow Textile Institute; John C. Martin, ME, Yale University; Thomas C. Warner, Jr., MS, Massachusetts Institute of Technology

Professors: Carl Barratt, PhD, Cambridge University; Gregory P. Broderick, PhD, University of Texas; Agamemnon D. Koutsospyros, PhD, Polytechnic University; Konstantine C. Lambrakis, PhD, Rensselaer Polytechnic Institute; Ismail Orabi, PhD, Clarkson University; Stephen M. Ross, PhD, Johns Hopkins University; John Sarris, PhD, Tufts University; Richard M. Stanley,

PhD, Yale University; David J. Wall, PhD, University of Pittsburgh

Associate Professors: Samuel D. Daniels, PhD, Boston University; Jean Nocito-Gobel, PhD, University of Massachusetts

The department of Mechanical, Civil, and Environmental Engineering comprises faculty, staff, and facilities that support two undergraduate (BS Civil Engineering and BS Mechanical Engineering) and two graduate (MS Environmental Engineering and MS Mechanical Engineering) programs.

BS, Civil Engineering

Program Coordinator: Gregory P. Broderick, PhD

The bachelor's degree program in Civil Engineering is nationally accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET).

Civil engineering is about community service; development and improvement; the planning, design, construction, and operation of facilities essential to modern life. Civil engineers are problem solvers taking on the challenges of environmental pollution, traffic congestion, infrastructure rehabilitation, drinking water and energy needs, urban redevelopment, and community planning. They are at the forefront of technology, leading users of some of the most sophisticated high-tech products available (e.g., GPS and GIS systems; fiber-optic sensors; CAD systems; highly sophisticated, task-specific computer software; etc.). Innovation is paramount in the solution to most civil engineering projects.

Program Mission and Educational Objectives

The mission of the Civil Engineering program is to provide a state-of-the-art/state-of-the-practice program designed to achieve four major educational goals:

- educate a new generation of civil engineers to meet the challenges, demands, and expectations of society,
- cultivate, enrich, and promote scholarship, responsibility, and service among our graduates,
- disseminate new knowledge,
- nurture interdisciplinary education for solving the problems facing an ever-changing society.

In order to achieve its mission, the educational objectives of the Civil Engineering program are to:

- provide educational experiences that prepare our students for professional practice of modern civil engineering in a global, societal, and environmental context,
- promote scholarship and problem-solving skills,
- instill an understanding of the technical, economic, political, ethical, and humanistic dimensions of civil engineering projects,
- prepare students to interact and communicate effectively in multidisciplinary fields,
- instill the desire and provide the educational foundation for lifelong learning,
- encourage service to the civil engineering profession and to society through professional registration and community involvement.

To help achieve the educational goals and objectives presented above, the faculty of the Civil Engineering program, in combination with the other faculties of the Tagliatela School of Engineering, have developed a new and innovative curriculum: the Multidisciplinary Engineering Foundation Spiral. It is an effort to provide the student, during the first two years of study, with a multidisciplinary engineering perspective. (See in-depth discussion under "Choosing A Major" in the Tagliatela School of Engineering main section.)

The foundation engineering courses (EAS prefix) taken during the first two years of study serve both as the basis for depth in civil engineering study and as part of a broad multidisciplinary background. Each foundation course also stresses the development of several essential skills, such as problem solving, oral and written communication, the design process, teamwork, project management, computer analysis methods, laboratory investigation, data analysis, and model development. In the junior and senior years, the student is exposed to required and elective civil engineering coursework embedded with experiences in analysis, design, and professional issues, providing insight into five civil engineering subdisciplines: structural, geotechnical, hydraulics-water resources, transportation, and environmental engineering. The

critical skills introduced during the first two years are further enhanced through a variety of pedagogical methods, including laboratory reports, team projects, design assignments, oral presentations, and participation in American Society of Civil Engineers Student Chapter activities, as well as field trips to local civil engineering projects. Upper-level technical electives provide comprehensive exposure to current and emerging technologies in the various civil engineering subdisciplines. Aspects of professional and ethical civil engineering practice and service to the profession and society are covered to a finite degree in all upper-level courses and extensively in a required course, "Professional and Ethical Practice of Engineering." Coursework culminates with a capstone design course that provides extensive exposure to "real-world" design problems faced within contemporary civil engineering professional practice. Humanities and social science courses are included at all levels of the curriculum.

The Civil Engineering program is enriched by a diverse student body which includes students of a wide range of ages, professional and nonprofessional experiences, and nationalities. Graduates of the program are encouraged to continue their education throughout their professional careers and to become registered professional engineers.

A bachelor's degree from an ABET-accredited institution is required to become a PE, a registered professional engineer. Accreditation is a testament to the quality of the Civil Engineering program.

Internship Requirement

The internship program is intended to enrich the academic experience of our undergraduate students, providing exposure to and participation in a working engineering environment. Each internship must involve a partnership consisting of students, engineering faculty, and employers/organizations to provide each student intern with an optimal experience. A minimum of 300 hours performing relevant engineering duties is required prior to graduation. Students must complete 60 credit hours toward the bachelor's degree in Civil Engineering before an internship is attempted.

The internship carries no credit for the degree; however, the requirement may be satisfied utilizing a co-op position, summer employment, and part-time or full-time positions that are approved by the student's employer and by the department/internship coordinator as relevant to the goals of the internship experience. A waiver (or substitution) of the internship requirement may be granted for students who are employed in the field, subject to a formal review by the department/internship coordinator. The student's request for such a waiver must be initiated one year prior to the anticipated graduation date.

Students must complete a total of 132 credit hours for the bachelor's degree in Civil Engineering, including the engineering requirements for the freshman year listed earlier in this section, the university core requirements, and the internship requirement. Students are also required to earn a cumulative quality point ratio of no less than 2.0 in all civil engineering courses and technical electives.

Required Courses

Freshman Year

CH 115	General Chemistry I
CH 117	General Chemistry I Laboratory
E 105	Composition
E 110	Composition and Literature
EAS 107P	Introduction to Engineering
EAS 109	Project Planning & Development
EAS 112	Methods of Engineering Analysis
EAS 120	Chemistry with Applications in Biosystems
Elective	University Core Competency 5.1 Elective
FE 001	Freshman Experience (required for all first-time day-division freshmen)
M 117	Calculus I
M 118	Calculus II

Sophomore Year

CE 203	Elementary Surveying
CE 218	Civil Engineering Systems
EAS 211	Introduction to Modeling of Engineering Systems
EAS 213	Materials in Engineering Systems

EAS	222	Fundamentals of Mechanics and Materials
EAS	224	Fluid – Thermal Systems
M	203	Calculus III
M	204	Differential Equations
PH	150	Mechanics, Heat, and Waves with Laboratory
PH	250	Electromagnetism and Optics with Laboratory

Junior Year

CE	206	Engineering Geology
CE	304	Soil Mechanics
CE	306	Hydraulics
CE	309	Water Resources Engineering
CE	312	Structural Analysis
CE	323	Mechanics and Structures Laboratory
CE	398	Civil Engineering Internship
CE	408	Steel Design and Construction
		or
CE	409	Concrete Design and Construction
		or
CE	412	Wood Engineering
E	300	Writing Proficiency Exam
EAS	232	Project Management and Engineering Economics
EAS	345	Applied Engineering Statistics

Plus one Core Competency 5.2 elective and one Core Competency 1.2 elective

Senior Year

CE	301	Transportation Engineering
CE	315	Environmental Engineering
CE	327	Soil Mechanics Laboratory
CE	328	Hydraulics and Environmental Laboratory
CE	407	Professional and Ethical Practice of Engineering
CE	500-501	Senior Project I and II
HS	101	Foundations of the Western World
		or
HS	102	The Western World in Modern Times

Plus 9 credit hours of civil engineering technical electives, of which 6 credits must be civil engineering design courses, and one Core Competency 6.0 elective

Minor in Civil Engineering

Students are required to complete 18 credit hours of civil engineering courses for the minor. With the approval of the program coordinator, engineering majors may substitute other civil engineering courses for a minor. Students must fulfill all prerequisites for courses chosen.

Required Courses

Six courses from the following list:

CE	203	Elementary Surveying
CE	218	Civil Engineering Systems
CE	301	Transportation Engineering
CE	304	Soil Mechanics
CE	306	Hydraulics
CE	309	Water Resources Engineering
CE	312	Structural Analysis
CE	315	Environmental Engineering
CE	407	Professional and Ethical Practice of Engineering

Student Chapter of the American Society of Civil Engineers

An active student chapter of the American Society of Civil Engineers (ASCE) sponsors technical lectures, field trips, and social activities that offer an opportunity for students to interact with practicing professionals. Membership is open to all civil engineering students in good standing.

Chi Epsilon

Students with high academic standing are nominated annually for membership in Chi Epsilon, the national honor society for civil engineers.

BS, Mechanical Engineering

Program Coordinator: John Sarris, PhD

Mechanical engineering represents a wide diversity of pursuits including the analysis, design, and testing of machines, products, and systems essential to everyday life – everything from doorknobs, tennis rackets, and fishing reels to power plants, skyscrapers, and automobiles. Mechanical engineers work in a variety

of fields such as aerospace, utilities, materials processing, transportation, manufacturing, electronics, and telecommunications.

Program Mission and Educational Objectives

The mission of the Mechanical Engineering program is to graduate professionally competent and responsible students who can meet industry's current and future needs in the general area of mechanical engineering.

In order to achieve its mission, the Mechanical Engineering program must ensure that its graduates:

- apply knowledge in mathematics (through multivariate calculus and differential equations, with familiarity with statistics and linear algebra),
- apply knowledge in science (chemistry and calculus-based physics, with depth in physics),
- apply knowledge in engineering, including the formulation and solution of engineering problems,
- use techniques, skills, and tools (contemporary analytic, computational, and experimental) necessary for modern engineering practice,
- design, conduct, and analyze results of experiments,
- actively participate in teams, including multidisciplinary teams,
- communicate effectively,
- accomplish design and realization of thermo/fluid and mechanical systems, components, and processes,
- understand the professional and ethical ramifications of engineering solutions within the context of modern society, and
- cultivate a lifelong capacity for learning.

Recognizing current knowledge-base demands on graduating engineers and responding to input from the program's stakeholders, the Mechanical Engineering department has embraced the concept of a multidisciplinary foundation to discipline-specific education (for details, see the description under the Tagliatela School of Engineering). Thus, the Bachelor of Science in Mechanical Engineering (BSME) curriculum includes, mostly in the first two years, a sequence of nine newly created (EAS prefix) foundation courses.

Mechanical engineering classes are kept small (rarely more than twenty students) and are taught almost exclusively by full-time faculty. Experienced practitioners from industry may also contribute their expertise in selected courses. Faculty and students work with industry in research and design projects.

With help from their academic advisor, students can choose from several available concentrations. Restricted and technical elective courses may be selected which offer the opportunity for further learning in areas such as fluids, energy, design, heat transfer, numerical analysis and computers, aerospace sciences, and control systems.

Academic Performance

Mechanical engineering majors who complete their first twelve credits of ME-prefixed engineering courses with a cumulative grade point average for these courses of less than 2.0 will have their academic records reviewed by the entire ME faculty on a regular basis. An ME-prefixed course may not be taken more than twice unless permission is granted by the program coordinator.

An undergraduate student already enrolled at the University of New Haven who wishes to transfer to Mechanical Engineering will normally be expected to satisfy the standards of the program for admission by transfer.

The coordinator of the Mechanical Engineering program reserves the right not to award transfer credit for technical courses taken at any institution more than ten years prior to a student's matriculation in the Bachelor of Science degree program in Mechanical Engineering at the University of New Haven, if it is determined that knowledge acquired in those courses is either inadequate or obsolete.

Exceptional students having an overall average of 3.50 or better may join the Delta Zeta Chapter of the Pi Tau Sigma honor society, which provides the opportunity for closer relations with faculty and other prominent individuals in the field for the purpose of further professional development, involvement in faculty research, and varied social and intellectual activities.

Practicum

It is recognized in the Mechanical Engineering program that experiential work as an undergraduate student is a valuable tool in launching a successful professional career. It is desirable, then, for mechanical engineering majors to spend some time prior to graduation performing engineering-related duties at a manufacturing company, consulting firm, technical organization, government agency, or some other appropriate setting.

Interns are required to complete a minimum of 300 hours of practical experience in an area or technical project closely related to mechanical engineering. The requirement may be satisfied through appropriate co-op work experience, part- or full-time employment, a summer job, or an apprenticeship or volunteer work at any time during a student's undergraduate studies. Registration, proof of compliance, or a request for waiver must be submitted to the department only after completion of 75 credit hours toward the BSME degree. The practicum is graded on a Satisfactory/Unsatisfactory basis and carries no academic credit.

The BSME program has been nationally accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET) for 35 years.

Required Courses

Students earning the Bachelor of Science in Mechanical Engineering are required to complete 126 credit hours, including the university core curriculum.

Freshman Year

In addition to the common first-year courses listed under the Tagliatela School of Engineering, mechanical engineering students take the Mechanical Engineering Skills Workshop. The one-hour-per-week workshop familiarizes students with basic practices in a laboratory environment, including safety considerations, design planning, layout, fabrication, and the use of basic measuring equipment and devices to test and verify a design. The workshop is offered in the spring semester and is graded on a Satisfactory/Unsatisfactory basis. The workshop carries no academic credit.

CH	115	General Chemistry I
CH	117	General Chemistry I Laboratory
E	105	Composition
E	110	Composition and Literature
EAS	107P	Introduction to Engineering
EAS	109	Project Planning and Development
EAS	112	Methods of Engineering Analysis
FE	001	Freshman Experience (required for all first-time day-division freshmen)
M	117	Calculus I
M	118	Calculus II
ME	001	Mechanical Engineering Skills Workshop

Plus one lab science elective (EAS 120 or a four-credit biology course) and 3 credits of a Social Interaction (Core Competency 5.1) elective

Sophomore Year

EAS	211	Introduction to Modeling of Engineering Systems
EAS	213	Materials in Engineering Systems
EAS	222	Fundamentals of Mechanics and Materials
EAS	224	Fluid-Thermal Systems
M	203	Calculus III
M	204	Differential Equations
ME	201	Engineering Graphics
PH	150	Mechanics, Heat, and Waves with Laboratory
PH	205	Electromagnetism and Optics with Laboratory

Plus 3 credits of a Communication (Core Competency 1.2) elective

Junior Year

E	300	Writing Proficiency Examination
EAS	230	Fundamentals and Applications of Analog Devices
EAS	232	Project Management and Engineering Economics
HS	101	Foundations of the Western World
		or
HS	102	The Western World in Modern Times
ME	300	Rigid Body Dynamics
ME	305	Engineering Thermodynamics
ME	308	Applied Elasticity
ME	315	Mechanics Laboratory
ME	321	Incompressible Fluid Flow

ME 330	Fundamentals of Mechanical Design (D)

Plus 3 credit hours of a restricted ME elective (ME344 or ME438), 3 credit hours of a Sense of History (Core Competency 4.1) elective, and 300 hours of Practicum

Senior Year

EAS 415	Professional Engineering Seminar
ME 404	Heat and Mass Transfer
ME 415	Thermo/Fluids Laboratory
ME 431-432	Mechanical Engineering Design I (D) and II (D)

Plus 3 credit hours of a restricted ME elective (ME 422 or energy-related course), 3 credit hours of an Aesthetic Responsiveness (Core Competency 6) elective, 3 credit hours of a design elective (D-designated ME course), 3 credit hours of a technical elective*, 3 credit hours of an engineering/mathematics analysis elective*, 3 credit hours of a Social Interaction and Global Perspective (Core Competency 5.2) elective.*

*Must be chosen in consultation with the student's advisor.

The BSME program as previously described includes two required stems of coherent course offerings: 1) Thermo/Fluid Systems, comprising EAS 211, EAS 224, ME 305, ME 321, ME 404, ME 415, and a restricted ME elective (21 credits) and 2) Mechanical Systems, comprising EAS 213, EAS 222, ME 308, ME 315, ME 330, and a restricted ME elective (21 credits). It should be noted that the required capstone design sequence ME 431-432 (6 credits) may be taken in either of the above stems. Also, technical and design electives are offered periodically in both thermo/fluid and mechanical systems, and the practicum experience could be in either one or both of these areas.

Minor in Mechanical Engineering

Students wishing to minor in Mechanical Engineering must complete the following courses with a minimum QPR of 2.0:

EAS 222	Fundamentals of Mechanics and Materials
EAS 224	Fluid-Thermal Systems
ME 201	Engineering Graphics
ME 300	Rigid Body Dynamics
ME 305	Engineering Thermodynamics
ME 321	Incompressible Fluid Flow

Student Chapter of ASME

Membership in the American Society of Mechanical Engineers student section is open to all mechanical engineering students in good standing and provides the opportunity for field trips to local industrial plants, attendance at technical presentations, social activities, and access to interesting professional literature.

Multidisciplinary Engineering Systems Division

Chairman: Michael A. Collura, PhD

Faculty in the Multidisciplinary Engineering Systems Division (MESD) hold a primary appointment to one of the disciplinary departments of the Tagliatela School of Engineering and are MESD Instructors, Fellows, or Scholars, depending on their level of participation in the activities of the division.

Mission

The mission of the division is to provide a multidisciplinary engineering foundation for a variety of programs, to administer engineering programs that cross traditional engineering boundaries, and to promote scholarship and excellence in engineering education.

Goals of the Division:

- to administer the *Multidisciplinary Engineering Foundation Spiral Curriculum*, including all courses with an EAS prefix,
- to administer the First Year Engineering Program,
- to oversee the Engineering Living/Learning Community,

- to administer the BS in General Engineering program, and
- to promote scholarship in engineering education.

First Year Engineering Program

Program Coordinator: Jean Nocito-Gobel, PhD

Faculty: Representatives from undergraduate programs in the school

The First Year Engineering Program prepares students for upper-level study in their chosen discipline through a combination of specialized advising, the first-year engineering curriculum, extracurricular activities, and workshops. Students learn about the contributions and attributes of various engineering and applied science disciplines to help them finalize their choice of a major area of study. Workshops and tutoring sessions help students meet the challenges of a rigorous academic program in engineering or applied science. Plant trips and guest speakers provide an exciting bridge to the industrial world beyond the classroom walls.

The Multidisciplinary Engineering Foundation Spiral Curriculum

The ***Multidisciplinary Engineering Foundation Spiral Curriculum*** is a four-semester sequence of engineering courses (EAS prefix) matched closely with the development of students' mathematical sophistication and analytical capabilities and integrated with coursework in the sciences. Students develop a conceptual understanding of engineering basics in a series of courses that stress practical applications of these principles. Topics in these courses include electrical circuits, fluid mechanics, heat transfer, material balances, properties of materials, structural mechanics, and thermodynamics. Unlike the more traditional approach, each of the foundation courses includes a mix of these topics presented in a variety of disciplinary contexts. A solid background is developed by touching key concepts at several points along the spiral in different courses, adding depth and sophistication at each pass. Each foundation course also stresses the development of several essential skills, such as problem solving, oral and written communication, organizational skills, the design process, teamwork, project management, computer analysis methods, laboratory investigation, data analysis, and model development. Students will build substantial depth in some of the foundation areas in subsequent courses, while other topics may not be further developed, depending on their chosen discipline. Thus the foundation courses serve both as the basis for depth in disciplinary study and as part of a broad multidisciplinary background.

First Semester

CH 115	General Chemistry I
CH 117	General Chemistry I Laboratory
E 105	Composition
EAS 107P	Introduction to Engineering (Project-Based)
EAS 109	Project Planning & Development
FE 001	Freshman Experience (required for all first-time day-division freshmen)
M 117	Calculus I

Second Semester

E 110	Composition and Literature
EAS 112	Methods of Engineering Analysis
EAS 120	Chemistry with Applications to Biosystems *or* Laboratory Science Course (a four-credit science course, with laboratory, specified by degree program)
Elective	Core Curriculum competency 5.1
M 118	Calculus II

During the sophomore year, engineering students begin taking courses in their chosen discipline, along with math, science, and additional multidisciplinary foundation courses.

BS, General Engineering

Program Coordinator: Michael A. Collura, PhD

The Bachelor of Science in General Engineering (GE) is a degree program designed for those interested in a career involving engineering knowledge but with more flexibility than is possible in a specific engineering discipline. It provides an opportunity for a student to combine engineering with any other undergraduate

discipline within the university, such as studies in:

- business areas
- communication
- legal studies
- science or math
- teaching and education

It also provides the opportunity for including elements of two different engineering disciplines in one degree program.

Career opportunities depend on the areas of study selected and might include:

- engineering and technical services
- technical management and sales
- engineering-related business activities
- music
- science-related activities
- computer-related activities
- technical writing
- medical services
- education

The Degree Program

The bachelor's degree program in General Engineering requires completion of 121 credit hours. Students can use the various electives (including engineering electives) to focus on an area of interest within engineering or to combine engineering with other areas. As part of the program, students must select a minor from any recognized program at UNH.

Undecided Option

Students who wish to earn an engineering degree in a designated discipline (chemical, civil, computer, electrical, mechanical) but who are undecided about their choice should start with the General Engineering program and change majors when they have decided on an area of specialization. For most choices, making a decision by the end of the first year of study will result in a smooth transition.

Required Courses

Freshman Year

CH	115/117	General Chemistry I and Laboratory
E	105	Composition
E	110	Composition and Literature
EAS	107P	Introduction to Engineering (Project-Based)
EAS	109	Project Planning & Development
EAS	112	Methods of Engineering Analysis
EAS	120	Chemistry with Applications in Biosystems
University Core Competency 5.1 Elective		
FE	001	Freshman Experience (required for all first-time day-division freshmen)
M	117	Calculus I
M	118	Calculus II

Sophomore Year

EAS	211	Introduction to Modeling of Engineering Systems
EAS	213	Materials in Engineering Systems
EAS	222	Fundamentals of Mechanics and Materials
EAS	224	Fluid-Thermal Systems
CS	110	Introduction to C Programming
		or
		Programming Elective
University Core Competency 1.2 Elective		
HS	101	Foundations of the Western World
		or
HS	102	The Western World in Modern Times
M	203	Calculus III
PH	150	Mechanics, Heat, and Waves with Laboratory
PH	205	Electromagnetism and Optics with Laboratory

Junior Year

E	300	Writing Proficiency Examination
EAS	230	Fundamentals & Applications of Analog Devices
EAS	232	Project Management & Engineering Economics
EAS	345	Applied Engineering Statistics
		or
M	204	Differential Equations

Engineering Elective
TSoE Electives (2)
University Core Competency 4.2 Elective
University Core Competency 6 Elective
Electives for Minor (2)

Senior Year

EAS 415 Professional Engineering Seminar
University Core Competency 5.2 Elective
University Core Competency 5.3 Elective
Engineering Elective
Electives for Minor (3)
Electives (2)

Additional Requirements

Students must select a minor area of study from any department at UNH. Electives designated as "Elective for Minor" may be used to satisfy the minor requirements. In some cases, courses required for the minor include courses that are specifically listed as required in General Engineering. For example, the calculus sequence counts toward a minor in math, so only three of the electives are needed to complete the math minor. In such a case, remaining "Elective for Minor" choices may be used as free electives.

In order to assure depth of study, at least five of the elective courses in the program should be at or above the 300 level and should have prerequisites.

Teaching Certification

There is a growing need for primary and secondary teachers in math and science. In addition, many high schools have begun offering engineering courses for their students, using curricula such as the Project Lead The Way program. Students completing the General Engineering program gain a broad understanding of math and science and of the application of these subjects in engineering work. This background, along with generous elective choices, provides an excellent opportunity to prepare for the teaching profession.

Within the state of Connecticut, certification to teach at the primary or secondary level requires substantial undergraduate coursework in the content area for which certification is sought. The General Engineering program requires significant study of math and science, as well as the application of math and science in the EAS courses. By selecting electives wisely, in consultation with an Education department advisor, a student can readily earn the necessary credits to satisfy the content requirements for math and a science area. Possible certification areas include math, chemistry, physics, and general science.

Graduates of the General Engineering program may apply for entry to the UNH Master of Science in Education (MSED) program, which will allow them to complete the Master's in Education and earn a teaching certification in one year after graduation. Eligible students may apply for accelerated entry into the MSED program and take three education courses as part of their undergraduate program. This accelerated program is designed to facilitate a smooth transition into the graduate program and to introduce the student to the teaching profession during the junior and senior years. Students interested in this option will be assigned a co-advisor from the Education department to assure compliance with the rigorous policies for certification.

Quality Engineering Option

The Quality Engineering option prepares students for jobs in the areas of quality and process improvement popularly applied in the business, service, government, and retail industries. Students will learn about concepts, theories, tools, and techniques, including process mapping, sampling techniques, statistical process control (SPC), experimental design applicable when implementing lean and six sigma projects, quality audit programs, SPC monitoring systems, and quality assurance. This option can be combined with other IE courses to form an Industrial Engineering minor or may be included as a separate cluster.

IE	346	Probability Theory
IE	347	Statistical Analysis (note: this would replace EAS 345)
IE	304	Production Control
IE	436	Quality Control

Bioengineering and Premed Options

An interest in bioengineering can be readily accommodated by the General Engineering degree in several ways. Students may combine the minor in Biology

with electives in other areas, or they can minor in one of the engineering disciplines and select several biology electives. For example, to prepare for a career in the biomedical field, a minor in Electrical, Mechanical, or Chemical Engineering can be combined with General and Human Biology, Anatomy and Physiology, and Cell Biology. Faculty in the Engineering and Biology departments would guide the student into specific courses based on career interests.

The rigor of an engineering program serves as an excellent preparation for medical school. Students choosing to pursue such a path should include courses in organic chemistry as well as biology. These can be fit into the structure of the General Engineering program using the minor and TSoE electives.

Management Option

The minor in Management includes coursework in accounting, leadership, economics, business law, management, and marketing. This broad background in business is an excellent choice for students who wish to pursue a career on the business side of a technical field.

BS, Industrial Engineering

Program Coordinator: M. Ali Montazer, PhD

The BS in Industrial Engineering degree program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (EAC/ABET).

The Bachelor of Science degree program in Industrial Engineering (BSIE) is being phased out. Admission to the program is closed to new students, and the remaining students are expected to graduate by May 2008. The industrial engineering courses are included in other degree programs and will continue to be offered. The graduate programs in Industrial Engineering are unaffected. A new undergraduate program in System Engineering is under development.

Mission and Educational Objectives

Tracing its lineage to the creation of the university in 1920, when one of the two original program offerings was called "Industrial Arts," the Industrial Engineering program defines its mission as being successful as a premier provider of undergraduate and graduate degrees in industrial engineering. This mission includes recruiting a diverse student body; providing state-of-the-art education; and interacting with employers to ensure that graduates are ready, willing, and able to contribute to their chosen professions in service organizations, manufacturing, the military, government, transportation, commerce, health care, and numerous other fields.

The program accomplishes its mission by preparing industrial engineers, people who engineer processes and systems that improve quality and productivity in any workplace setting. The program's objectives are to produce graduates who:

- are career-ready and capable of pursuing graduate studies,
- can communicate their ideas effectively,
- can successfully interact with team members and others, and
- are professionally and ethically responsible.

The program combines strong theoretical foundations in science, mathematics, probability and statistics, human factors/ergonomics, humanities, and social sciences with industrial engineering and computer applications in order to improve effectiveness in virtually all industries and economic sectors, including manufacturing, transportation, service, and government. Graduates will be prepared to address issues of operational design, process and product quality, methods improvement, and facilities design.

Industrial engineering is one of the most flexible and diverse of all engineering disciplines, providing a broad view of the complex interrelated activities necessary to produce a product or service efficiently in a competitive market. Through selection of elective courses, an industrial engineering student can specialize in a broad range of areas applicable to manufacturing and service industries, including quality control, ergonomics, work design, operations research, production control, facilities planning, logistics, and manufacturing.

Industrial engineering is concerned with the design, evaluation, and improvement of human/machine systems, processes, and methods, considering such factors as economics, safety, the envi-

ronment, and ethics. The skills imparted and insights developed in the graduates are intended to be useful for professional practice in a wide spectrum of manufacturing industries – in transportation; in insurance and service industries; and in government, retail trade, and commerce. Expertise in industrial engineering is presently highly sought, as the joint concern for productivity and quality improvement is manifested throughout the national and global economy. Industrial engineers are among the most upwardly mobile of those in the engineering profession by virtue of their training and expertise. Many industrial engineers have attained top management positions in a variety of industries.

The program provides a broad engineering background during the first two years. In the last two years, students are required to take an ensemble of courses which are designed to shape their expertise in industrial engineering. These include courses in manufacturing, robotics, quality control, production, facilities planning, operations research, ergonomics, and simulation modeling.

Extensive laboratory facilities support our Industrial Engineering academic program. These include laboratories in human factors/ergonomics, manufacturing engineering, work design, facilities planning, computer-aided design and computer-aided manufacturing (CAD/CAM), and robotics.

Required Courses

Students earning the Bachelor of Science in Industrial Engineering (BSIE) must complete 127 credit hours, including the university core curriculum. The program also includes three credit hours of internship or a technical elective chosen in consultation with the student's advisor for relevancy and content. Internship refers to project work related to industrial engineering with local industries. Under the umbrella of BSIE, students have the option of choosing a concentration in manufacturing systems, quality systems, computer systems, or information systems. The latter two concentrations consist of courses from the Electrical and Computer Engineering and Computer Science programs. The BSIE curriculum is as follows:

Freshman Year

CH 115	General Chemistry I
CH 117	General Chemistry I Laboratory
E 105	Composition
E 110	Composition and Literature
EAS 107	Introduction to Engineering
EAS 109	Project Planning and Development
EAS 112	Methods of Engineering Analysis
EAS 120	Laboratory Science for Engineers
	or
BI 121	General and Human Biology
EC 133	Principles of Economics I
FE 001	Freshman Experience (required for all first-time day-division freshmen)
M 117	Calculus I
M 118	Calculus II

Sophomore Year

EAS 211	Introduction to Modeling of Engineering Systems
EAS 213	Materials in Engineering Systems
EAS 222	Fundamentals of Mechanics and Materials
EAS 230	Fundamentals and Applications of Analog Devices
EAS 232	Project Management and Engineering Economics
IE 243	Work Design
M 203	Calculus III
M 204	Differential Equations
PH 150	Mechanics, Heat, and Waves with Laboratory
PH 205	Electromagnetism and Optics with Laboratory

Junior Year

E 225	Technical Writing and Presentation
E 300	Writing Proficiency Examination
IE 304	Production Control
IE 344	Human Factors Engineering
IE 346	Probability Analysis
IE 347	Statistical Analysis
IE 348	Manufacturing Processes

Plus one social science elective, one literature or philosophy elective, and two concentration electives

Senior Year

EAS	415	Professional Engineering Seminar
HS	102	The Western World in Modern Times
IE	402	Operations Research
IE	414	Engineering Management
IE	435	Simulation and Applications
IE	436	Quality Control
IE	443	Facilities Planning
IE	498	Internship or a technical elective

Plus one art/music/theatre elective and two concentration electives

Concentrations

Students may choose to concentrate in any of the following:

Manufacturing Systems

IE	437	Metrology and Inspection in Manufacturing
IE	448	Advanced Manufacturing Engineering Operations
IE	460	Computer-Aided Manufacturing
IE	465	Robotics in Manufacturing

Quality Systems

IE	311	Quality Assurance
IE	407	Reliability and Maintainability
IE	408	Systems Analysis
IE	437	Metrology and Inspection in Manufacturing

Computer Systems

EE	356	Digital Systems II
EE	371	Computer Engineering
EE	472	Computer Architecture
EE	475	Embedded Systems, Interfaces, and Buses

Information Systems

CS	210	Java Programming
CS	214	Computer Organization
CS	215	Introduction to Databases
CS	247	Network Essentials and Technologies

Students who do not wish to adopt a concentration will have to complete four 300-or-higher-level courses (totaling at least 12 credits) in industrial engineering. In special cases, courses from other engineering disciplines and computer science may be taken with the approval of the program coordinator.

Minor in Industrial Engineering

Students enrolled in degree programs in the Tagliatela School of Engineering may take a minor in Industrial Engineering by completing 18 credit hours of industrial engineering courses. The coursework for the minor consists of the following required and elective courses.

Required Courses

IE	243	Work Design
IE	304	Production Control
IE	346	Probability Analysis
IE	347	Statistical Analysis

Elective Courses

Two 300-or-higher-level industrial engineering courses (6 credits) chosen with the approval of the student's advisor.

Logistics Certificate

Logistics is a discipline which has become critical to the efficient development and operational support of complex, costly systems. Its subdivisions include customer requirements planning, design-to-cost concepts, configuration control, life-cycle analysis, transportation and distribution, reliability, and field support networks. Modern logistics is the science which ensures that needs are met when they occur, at a reasonable resource expenditure. UNH offers the following undergraduate certificate as well as a graduate certificate in logistics.

The undergraduate certificate sequence consists of five three-credit courses followed by a one-credit capstone logistics seminar. This course sequence provides students with a working knowledge of logistics and covers topics included in the Certified Professional Logistician examination of the Society of Logistics Engineers. These undergraduate-level courses are designed for professionals who either do not hold a college degree or who have earned degrees in non-technical fields of study. Prerequisite courses in mathematics, computer science, economics, and statistics

may be needed by students who lack appropriate educational background.

The six-course series required for the logistics certificate is:

LG	300	Defense Sector Logistics
LG	310	Introduction to Logistics Support Analysis
LG	320	Reliability and Maintainability Fundamentals
LG	410	Life Cycle Concepts
LG	440	Data Management in Logistics Systems
LG	490	Logistics Seminar

HENRY LEE COLLEGE OF PUBLIC SAFETY

Thomas A. Johnson, DCrim, Dean

William M. Norton, PhD, JD, Associate Dean

The Henry Lee College of Public Safety provides educational services for students who wish to major in degree programs specifically oriented toward career paths in occupational safety and health, criminal justice, forensic science, fire science and arson investigation, corrections, law and public affairs dispute resolution, paralegal studies, and related programs. The school provides a broad professional education which often incorporates classroom learning with laboratory and field experience. The school attracts students of varied ages and levels of experience, from recent high school graduates to seasoned industry professionals. It also serves professionals seeking programs designed to meet requirements of national and/or regional accreditations and licensures.

Graduate degree programs and certificates are available in various disciplines through the Graduate School.

University Core Curriculum

In addition to departmental requirements, students must fulfill all requirements of the core curriculum on page 15.

Programs and Concentrations

Undergraduate Programs

Bachelor of Science

Criminal Justice
- Corrections
- Crime Analysis
- Investigative Services
- Juvenile and Family Justice
- Law Enforcement Administration
- Victim Services Administration

Fire Science
- Fire/Arson Investigation
- Fire Administration
- Fire Science Technology

Fire Protection Engineering

Forensic Science

Legal Studies
- Public Affairs
- Dispute Resolution
- Paralegal Studies

Occupational Safety and Health Administration

Associate in Science

Criminal Justice

Fire and Occupational Safety

Legal Studies

Occupational Safety and Health Administration

Certificates

Crime Analysis

Fire/Arson Investigation

Fire Prevention

Forensic Computer Investigation

Hazardous Materials

Industrial Fire Protection

Information Protection and Security

Law Enforcement Science

Occupational Safety and Health

Paralegal Studies

Private Security

Victim Services

Graduate Programs

Master of Science

Criminal Justice

Fire Science

Forensic Science

Industrial Hygiene
Occupational Safety and Health Management
National Security and Public Safety

Graduate Certificates

Arson Investigation
Criminal Justice/Security Management
Fire Science/Administration and Technology
Forensic Science/Advanced Investigation
Forensic Science/Criminalistics
Forensic Science/Fire Science
Forensic Computer Investigation
Forensic Psychology
Industrial Hygiene
Information Protection and Security
National Security
National Security Administration
Occupational Safety
Public Safety Management
Victim Advocacy & Service Management

Criminal Justice

Chair: Mario T. Gaboury, PhD

Professors Emeritus: David A. Maxwell, JD, University of Miami, CPP; L. Craig Parker, Jr., PhD, State University of New York at Buffalo

Professors: Thomas A. Johnson, DCrim, University of California, Berkeley; Henry C. Lee, PhD, New York University; Lynn Hunt Monahan, PhD, University of Oregon; William M. Norton, PhD, Florida State University, JD, University of Connecticut; Gerald D. Robin, PhD, University of Pennsylvania; William L. Tafoya, PhD, University of Maryland

Associate Professors: James J. Cassidy, PhD, Hahnemann University Graduate School, JD, Villanova School of Law; Mario T. Gaboury, PhD, Pennsylvania State University, JD, Georgetown University; Howard A. Harris, PhD, Yale University, JD, St. Louis University; James Monahan, PhD, Florida State University

Assistant Professors: James M. Adcock, PhD, University of South Carolina; Michael P. Lawlor, JD, George Washington University, Connecticut state representative; Donna Decker Morris, JD, Yale University; Fadia Narchet, MS, PhD, Florida International University; Jongyeon Tark, PhD, Florida University; Christopher M. Sedelmaier, PhD, Rutgers University

Practitioners-in-Residence: William H. Carbone, MPA, University of New Haven, Executive Director, Judicial Branch,Court Support Services Division, State of Connecticut; The Honorable Martin Looney, JD, University of Connecticut; Joseph R. Polio, MS, University of New Haven

Senior Lecturer: Ernest W. Dorling, MPA, Troy State University, European Campus

Criminal Justice

Coordinator of Corrections:
Lynn Hunt Monahan, PhD
Coordinator of Crime Analysis:
Christopher M. Sedelmaier, PhD
Coordinator of Investigative Services:
James M. Adcock, PhD
Coordinator of Juvenile and Family Justice:
Lynn Hunt Monahan, PhD
Coordinator of Law Enforcement Administration:
William M. Norton, PhD, JD
Coordinator of Victim Services Administration:
Mario T. Gaboury, PhD, JD

The Criminal Justice Program at the University of New Haven provides students with a comprehensive and professional understanding of crime and the administration of justice. The goal of the program is to prepare students for professional careers in criminal justice, public service, and social service organizations, as well as for future study in graduate and professional fields. The program meets these goals through its highly qualified full-time faculty, who both teach and conduct research in the field. The full-time faculty members are supported by part-time faculty members drawn from the professional community who teach specialized courses in their areas of expertise.

The criminal justice program of study follows the university's mission to provide engaged learning opportunities by the utilization of internships, service learning,

and individual student research learning opportunities. Through this engaged learning model students develop an understanding of both theoretical and practical issues of crime and the administration of justice.

There is a full range of career opportunities available in criminal justice at all levels of government and within the private sector. Because of its interdisciplinary approach, combined with the university's engaged learning commitment, the study of criminal justice fills the needs of students seeking careers in teaching, research, and law and of criminal justice professionals seeking academic and professional advancement.

The department offers courses from the associate's to the master's level as well as certificates. Complete information about the master of science degree in criminal justice is available in the Graduate School catalog.

Undergraduate criminal justice concentrations in law enforcement, corrections, crime analysis, investigative services, juvenile and family justice, and victim services administration are available in the criminal justice program. A separate program is offered in forensic science.

The Criminal Justice Club

The American Criminal Justice Association (ACJA) is a national professional and preprofessional organization with goals that include improved technology, training, and service for the benefit of the criminal justice system. UNH's local student chapter of ACJA is the Psi Omega chapter. This club offers students a variety of activities including community service as well as the opportunity to meet and work with practitioners in the field. Students also meet others with similar interests and are eligible to participate in regional and national programs and activities.

Additional information may be obtained by contacting the faculty advisor for the chapter, Dr. James Adcock, in the Department of Criminal Justice.

Alpha Phi Sigma–Alpha Tau Chapter

Alpha Tau is the local chapter of Alpha Phi Sigma, the National Criminal Justice Honor Society. Alpha Tau's purpose is to recognize and promote academic excellence among undergraduate and graduate students. The local chapter was formed in 1998 and embraces the full spectrum of criminal justice students from criminal justice and forensic science to pre-law and the related social sciences.

Undergraduate students who have completed 60 credit hours and at least four criminal justice courses and who have at least a 3.4 cumulative QPR are eligible for membership. Graduate students who have a 3.4 cumulative QPR and who have completed at least 12 credit hours of graduate work, or 9 credit hours of graduate work and at least 3 additional undergraduate credit hours, are eligible for membership.

Additional information may be obtained by contacting the Alpha Tau advisor, Dr. James Monahan, in the Department of Criminal Justice.

The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine their education with practical, paid work experience in their career field. For further details see "The Co-op Program," which appears earlier in this catalog, or contact the Co-op coordinator in The Henry Lee College of Public Safety.

BS, Criminal Justice

Required Courses

Students earning the BS in criminal justice are required to complete at least 121 credit hours, including the university core curriculum and the common courses for criminal justice majors listed below:

CJ	100	Introduction to Criminal Justice
CJ	102	Criminal Law
CJ	201	Principles of Criminal Investigation
CJ	205	Forensic Psychology
CJ	217	Criminal Procedure I
CJ	250	Scientific Methods in Criminal Justice
CJ	251	Quantitative Applications in Criminal Justice
CJ	311	Criminology
CJ	400	Criminal Justice Problems Seminar

CJ	500A	Criminal Justice Pre-Internship
CJ	500B	Criminal Justice Internship

Concentration in Corrections

This concentration is designed to prepare students for careers with federal, state, local, and private correctional agencies and institutions. It is concerned with the treatment of offenders, administration, planning, and research. The curriculum emphasizes law, social and behavioral sciences, and research methodology.

Students earning the BS in criminal justice with a concentration in corrections must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

CJ	209	Correctional Treatment Programs
CJ	220	Legal Issues in Corrections
CJ	408	Child and Family Intervention Strategies
CJ	409	Adult Intervention Strategies
CJ	412	Substance Abuse and Addictive Behavior

Plus two restricted electives

Concentration in Crime Analysis

This concentration focuses on the application of advanced computer and Geographical Information Systems (GIS) in the collection and analysis of crime data. Data from local, state, and federal agencies are considered. Students are encouraged to join the International Association of Crime Analysis. Graduates will enter the field of Crime Analysis as civilians or sworn officers, depending on their career goal. The program will also appeal to international students interested in applying such technology to their country's police system. Students will be required to complete a Research Project as well as present their findings at a departmental Crime Research Forum.

Students earning a BS in criminal justice with a concentration in crime analysis must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

CJ	498	Research Project
CJ	555	Crime Prevention Through Environmental Design
CJ	556	Problem-Oriented Policing
CJ	557	Crime Mapping and Analysis
E	225	Technical Writing and Presentation
E	230	Public Speaking
EN	540	Introduction to Geographical Information Systems
MG	115	Fundamentals of Management

Plus one restricted elective

Concentration in Investigative Services

This concentration is designed to provide an interdisciplinary educational program for those entering law enforcement science fields, especially investigative work. In addition, it is geared toward enhancing the scientific knowledge of those now holding investigative positions in various enforcement agencies. The curriculum emphasizes law enforcement, evidence, forensic science, and natural and physical sciences.

Students earning the BS in criminal justice with a concentration in investigative services must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

CJ	215	Introduction to Forensic Science
CJ	218	Criminal Procedure II and Evidence
CJ	303	Forensic Science Laboratory I
CJ	415	Crime Scene Investigation and Pattern Evidence
CJ	420	Advanced Investigative Techniques

Plus one restricted elective

Concentration in Juvenile and Family Justice

This concentration is designed to prepare students for careers with federal, state, local, and private correctional agencies and with service agencies whose mission brings them into regular contact with the justice system. The curriculum is geared to preparing service providers with knowledge of law and of social and behavioral sciences as well as communication skills with children, adolescents, and people of diverse cultural backgrounds.

Students earning a BS in criminal justice with a concentration in juvenile and family justice must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

CJ	209	Correctional Treatment Programs
CJ	221	Juvenile Justice System
CJ	408	Child and Family Intervention Strategies
CJ	409	Adult Intervention Strategies
CJ	411	Victimology

Plus two restricted electives

Concentration in Law Enforcement Administration

This concentration prepares students for careers in federal, state, and local law enforcement agencies, public and private security forces, planning agencies, and other related settings. The curriculum focuses on the roles, activities, and behaviors of people with regard to maintaining law and order, providing needed services, protecting life and property, and planning and research.

Students earning the BS in criminal justice with a concentration in law enforcement administration must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

CJ	215	Introduction to Forensic Science
CJ	218	Criminal Procedure II and Evidence
CJ	221	Juvenile Justice System
CJ	333	Police Civil Liability
CJ	402	Police in Society

Plus two restricted electives

Concentration in Victim Services Administration

This concentration provides students with an interdisciplinary, practice-oriented educational program. It is designed to prepare graduates for entry into a wide variety of positions in law enforcement, criminal justice, the courts, corrections, and victim services programs as well as professional settings involving work with victims of crime, their families, and the community at large. The curriculum encourages a broad-based training experience focusing on the enhancement of the appropriate involvement of victims in the justice system and the provision of services to victims and survivors.

Students earning the BS in criminal justice with a concentration in victim services administration must complete the university core curriculum, the common courses for criminal justice majors listed above, and the following:

CJ	210	Ethnic and Gender Issues in Criminal Justice
CJ	221	Juvenile Justice System
CJ	315	Domestic Violence
CJ	411	Victimology
CJ	413	Victim Law and Service Administration

Plus two restricted electives

AS, Criminal Justice

Students completing the first two years of the bachelor of science degree program in criminal justice with the law enforcement administration concentration or the corrections concentration (61 credit hours) are eligible to receive the associate in science degree. Interested students should contact their advisor.

Minor in Criminal Justice

To minor in criminal justice, students must complete 18 credit hours of criminal justice courses, including CJ 100 Introduction to Criminal Justice.

Criminal Justice Certificates

Advisor: Mario Gaboury, PhD, JD

The department offers certificates in crime analysis, law enforcement science, private security, and victim services. Students must complete 12-18 credit hours of required courses to earn a certificate. Credits earned for a certificate may be applied toward the requirements for a degree program at a later date.

Crime Analysis Certificate

This certificate is designed to focus on the analysis of crime and criminal behavior. Geographic information systems and computer-assisted statistical packages are used to assist in the study of crime analysis. All students are required to take 21 credit hours, including the courses listed below:

Requirements:

CJ	498	Research Project
CJ	555	Crime Prevention Through Environmental Design
CJ	556	Problem-Oriented Policing
CJ	557	Crime Mapping and Analysis
EN	540	Introduction to Geographical Information Systems

Plus one CJ elective

Plus one Environmental Science elective

Forensic Computer Investigation Certificate

Advisor: Thomas A. Johnson, DCrim

This certificate is designed for those professionals who wish to enhance their knowledge and skills in forensic computer investigation. Students interested in enrolling in the courses in this certificate must obtain permission of the instructor and/or the certificate advisor prior to registration. Alternate course selections may be permitted with the permission of the certificate advisor. Four courses (12 credits) are required for completion of the certificate:

CJ	520	Computer Crime: Legal Issues and Investigative Procedures
CJ	524	Network Security, Data Protection, and Telecommunications

Plus two of the following, with approval of advisor:

CJ	201	Principles of Criminal Investigation
CJ	217	Criminal Procedure I
CJ	218	Criminal Procedure II and Evidence
CJ	415	Crime Scene Investigation and Pattern Evidence
CJ	420	Advanced Investigative Techniques
CJ	450	Special Topics
CJ	498	Research Project
CJ	522	Computers, Technology, and Criminal Justice Information Management Systems
CJ	523	Internet Vulnerabilities and Criminal Activity

Information Protection and Security Certificate

Advisor: Thomas A. Johnson, DCrim

This certificate is designed to prepare individuals for assuming the responsibilities of protecting their agency or corporate information systems. The basics of information systems security as well as legal issues and cyber response strategies will be reviewed. Computer gaming simulations as well as online attack and defense techniques will be presented for student assignments.

Five courses (15 credits) are required for completion of the certificate:

CJ	525	Information Systems Threats, Attacks, and Defenses
CJ	526	Firewall and Secure Enterprise Computing
CJ	527	Internet Investigations and Audit-Based Computer Forensics
CJ	528	Computer Viruses and Malicious Code
CJ	529	Practical Issues in Cryptography

Law Enforcement Science Certificate

This certificate is designed to provide the fundamentals of criminal investigation techniques and procedures, particularly for those involved in or planning to enter investigative positions in law enforcement agencies in both the private and public sectors. All students are required to take 18 credit hours, including the courses listed below:

CJ	201	Principles of Criminal Investigation
CJ	215	Introduction to Forensic Science
CJ	227	Fingerprints with Laboratory
CJ	303	Forensic Science Laboratory
CJ	415	Crime Scene Investigation and Pattern Evidence

Plus one CJ elective

Private Security Certificate

This certificate is a concentrated program of study in management security systems for private business and industry. All students are required to take 18 credit hours, including the courses listed below:

CJ	105	Introduction to Security
CJ	203	Security Administration
CJ	226	Industrial Security
CJ	410	Legal Issues in Private Security
FS	204	Fire Investigation I
SH	100	Safety Organization and Management

Victim Services Certificate

Students matriculated in other concentration areas, as well as non-matriculated students, may elect to take the five courses listed below to earn a certificate in victim services administration. Although internships are not required of certificate students, an internship experience is strongly encouraged and will be facilitated at the student's request.

CJ	210	Ethnic and Gender Issues in Criminal Justice
CJ	221	Juvenile Justice System
CJ	315	Domestic Violence
CJ	411	Victimology
CJ	413	Victim Law and Service Administration

Forensic Science

Coordinator: Azriel Gorski, PhD

BS, Forensic Science

Forensic science is a broad, interdisciplinary field in which biological and physical science methods are used to analyze and evaluate physical evidence related to matters of criminal and civil law. The objective of the program is to provide an appropriate education and scientific background to men and women planning careers as physical evidence examiners in crime laboratories. The curriculum is also appropriate for individuals currently working in forensic science laboratories and would be valuable for those interested in related areas whose professional work requires in-depth knowledge of science and scientific investigation methods. The curriculum provides sufficient flexibility to allow students to focus their studies in chemistry or in biology.

Required Courses

Students earning the BS in forensic science must complete 131 credit hours, including the university core curriculum and the following courses:

CJ	100	Introduction to Criminal Justice
CJ	102	Criminal Law
CJ	201	Principles of Criminal Investigation
CJ	215	Introduction to Forensic Science
CJ	403-404	Advanced Forensic Science Laboratory I and II
CJ	415	Crime Scene Investigation and Pattern Evidence
CJ	416	Seminar in Forensic Science
CJ	502	Forensic Science Internship
		or
CJ	498	Research Project
BI	253-254	General Biology for Science Majors with Laboratory I and II
BI	304	Immunology with Laboratory
		or
M	203	Calculus III
BI	311	Molecular Biology with Laboratory
		or
CH	331/333	Physical Chemistry I with Laboratory
BI	461	Biochemistry with Laboratory
		or
CH	332/334	Physical Chemistry II with Laboratory
CH	115-116	General Chemistry I and II
CH	117-118	General Chemistry Laboratory I and II
CH	201-202	Organic Chemistry I and II
CH	203-204	Organic Chemistry Laboratory I and II
CH	211	Quantitative Analysis with Laboratory
CH	221	Instrumental Methods of Analysis with Laboratory
CS	107	Computers and their Applications
M	117-118	Calculus I and II
PH	150	Mechanics, Heat, and Waves with Laboratory
PH	205	Electromagnetism and Optics with Laboratory

Plus five electives chosen through discussion with advisor

Legal Studies

Director: Donna Decker Morris, JD

From the principles in the U.S. Constitution to regulation of the food we eat, law permeates our society. With the globalization of the world's economy, law and regulation have become increasingly important to business. At the same time, new forms of dispute resolution are being developed in government, business, and industry as alternatives to the courtroom. Legal policy will increasingly shape our future. Legal Studies is a unique and exciting undergraduate degree program designed to prepare graduates to be part of that future–and to help shape it.

BS, Legal Studies

The legal studies major provides students with an understanding of fundamental principles of law and analyzes the role and function of the American legal system within a societal and political context. The interdisciplinary course of study develops critical thinking and writing skills and prepares students for law-related careers or for law or graduate school. Concentrations allow students to focus on particular career aspirations and interests.

A two-semester internship in the final year of study combines classroom learning with on-the-job experience, enhancing employment opportunities after graduation. Placements will be geared to the student's area of concentration.

Students earning a BS in legal studies must complete a minimum of 125 credit hours, including the university core curriculum, common courses for legal studies majors, and designated courses for a legal studies concentration.

Required common courses for major:

LS	100	Introduction to Legal Concepts
PS	122	State and Local Government
LS	240	Legal Research and Writing I
LS	241	Legal Research and Writing II
LS	201	Legal Ethics and Professional Responsibilities
LS	238	Civil Procedure I
LS	330	Legal Investigation
PS	332	Constitutional Law
LS	301	Administrative Law and Regulation
LS	500	Pre-Internship
LS	501-502	Legal Studies Internship I and II

Restricted Electives:

Legal Studies majors are also required to take the following courses as restricted electives, some of which may be used to satisfy university core curriculum requirements:

CO	100	Human Communication
		or
E	230	Public Speaking and Group Discussion
E	220	Writing for Business and Industry
		or
E	225	Technical Writing and Presentation
		or
E	251	Narrative Nonfiction
P	111	Introduction to Psychology
PL	222	Ethics
PS	121	American Government and Politics

Plus one of the following sequences:

P	301	Statistics for the Behavioral Sciences
		and
P	305	Experimental Methods in Psychology
		or
CJ	250	Scientific Methods in Criminal Justice
		and
CJ	251	Quantitative Applications in Criminal Justice

Concentrations

Students select an area of concentration for the elective portion of the program. The concentrations consist of five courses that focus on a specific approach to the field of legal studies. Course selection is made with the assistance of the program advisor.

Concentration in Public Affairs

The public affairs concentration analyzes the application of law to public policy concerns, while providing legal research and writing skills. Government

regulation, multicultural issues, vulnerable populations, and emerging issues are emphasized. This concentration is designed to prepare students for further education in law or graduate school or for careers in law-related fields and regulatory affairs in federal, state, or local governments, business, industry, and non-profit organizations.

Concentration Requirements:

PA 404 Public Policy Analysis

Plus four of the following, or related courses, as approved by program advisor:

CJ 100 Introduction to Criminal Justice
CJ 102 Criminal Law
CJ 413 Victim Law and Service Administration
CJ 209 Correctional Treatment Programs
CJ 210 Ethnic and Gender Issues in Criminal Justice
CJ 221 Juvenile Justice System
CJ 400 Criminal Justice Problems Seminar
CO 420 Communication and the Law
EC 311 Government Regulation of Business
LS 430 Computers and the Law
LS 401 Alternative Dispute Resolution: Models and Practice
LS 405 Environmental Law
LS 410 Counter-terrorism and the Law
MR 330 Coastal Resources Management
PS 216 Urban Government and Politics
PS 224 Public Attitudes and Public Policy
PS 228 Public Interest Groups
PS 230 Anglo-American Jurisprudence
PS 231 Judicial Behavior
PS 232 The Politics of the First Amendment
SH 400 Occupational Safety and Health Legal Standards

Plus eight electives

Concentration in Dispute Resolution

Students in the dispute resolution concentration will explore alternative methods for resolving disputes traditionally resolved through the civil or criminal legal systems. This concentration is designed to provide students with an understanding of the theories and practices of alternative dispute resolution and an introduction to practical skills in negotiation, mediation, and facilitation in preparation for law-related, alternative dispute resolution careers in the judicial system, government agencies, and the private sector or for further education in law or graduate school.

Concentration Requirements:

LS 401 Alternative Dispute Resolution: Models and Practice

Plus four of the following, or related courses, as approved by program advisor:

CJ 205 Forensic Psychology*
CO 100 Human Communication*
CO 410 Management Communication Seminar
CO 205 Intercultural Communication
P 321 Social Psychology
SW 340 Group Dynamics

Plus eight electives

*Must be in addition to course selected to fulfill common course requirement for the major

Concentration in Paralegal Studies

This concentration is designed to prepare students for careers as paralegals in private law firms, government agencies, or corporations or for careers in law-related areas in the insurance industry, the banking and securities industries, businesses, or nonprofit agencies and in federal, state, or local governments. Concentration electives allow students to focus on such areas as investigations, criminal law, general civil law, or law and financial issues. As part of a high-quality liberal arts education, the concentration will also enable students to pursue broad career opportunities or graduate school. Development of critical thinking, research, and writing abilities is emphasized, along with practical paralegal skills.

Concentration Requirements:

LS 239 Civil Procedure II: Litigation

Plus four of the following, or related courses, as approved by program advisor:

A 101 Introduction to Financial Accounting
A 112 Introductory Accounting II
A 435 Federal Income Taxation I

CJ	100	Introduction to Criminal Justice
CJ	102	Criminal Law
CJ	201	Principles of Criminal Investigation
CJ	215	Introduction to Forensic Science
CJ	415	Crime Scene Investigation and Pattern Evidence
CJ	420	Advanced Investigative Techniques
LA	101	Business Law and the Regulatory Environment
LS	226	Family Law
LS	244	Estates and Trusts
LS	326	Real Estate Law: Property and Conveyancing
LS	430	Computers and the Law

Plus eight electives

AS, Legal Studies

The associate's degree program in legal studies prepares students to work as paralegals in law firms and legal departments, performing substantive legal work under the supervision of attorneys, or in law-related positions in corporations, banks, and local, state, and federal governments. Students may also continue their studies toward a bachelor's degree.

Students are required to complete 60 credit hours, including the university core requirements for the associate's degree and the following courses:

LS	100	Introduction to Legal Concepts
LS	201	Legal Ethics and Professional Responsibility
LS	238	Civil Procedure I
LS	239	Civil Procedure II: Litigation
LS	240	Legal Research and Writing I
LS	241	Legal Research and Writing II
LS	330	Legal Investigation

Plus three Legal Studies electives

Plus PL 222 Ethics

and

CO	100	Human Communication

or

E	230	Public Speaking and Group Discussion

Plus one elective

Successful completion of the requirements for an associate's degree in legal studies includes the courses required for the Paralegal Studies Certificate described in the Institute of Law and Public Affairs section below. The certificate is awarded via the Institute.

Minor in Legal Studies

Students may minor in legal studies by successfully completing LS 100 Introduction to Legal Concepts plus five additional legal studies courses.

The Institute of Law and Public Affairs

Director: William M. Norton, JD, PhD

The Institute of Law and Public Affairs has been established to provide undergraduates with specific training in the areas of the paralegal profession, public policy, and public affairs. Students with an undergraduate major in any of the schools of the university may attain paraprofessional status in paralegal studies or public affairs by completing a minor in the Institute. The term paraprofessional applies to those with special training in a professional field who do not yet possess the terminal degree normally required in the profession. In many instances, paraprofessional status is a step toward the accomplishment of the final degree.

Minor in Public Affairs

The public affairs minor in the Institute of Law and Public Affairs is directed toward providing training for civil service positions at all levels of government. The goal of such training is to provide more effective public administrators and to introduce creativity into the profession of public service. The public affairs minor will take a problem-solving approach to the discipline as students will be conducting basic, in-depth research on problems of governmental agencies. Students in this minor will be able to develop valuable insights into the nature of the public policy process from the vantage point of the bureaucracy. Courses are selected in consultation with a faculty advisor.

Paralegal Studies Certificate

Advisor: Donna Decker Morris, JD

The paralegal studies certificate requires a) 18 credit hours of designated legal studies courses, each with a grade of C minus or better and b) completion of 60 undergraduate college credits at UNH or elsewhere, including 18 credit hours of general education courses. The University of New Haven has conducted this certificate program since 1971, providing paralegal education to both traditional and part-time evening students. The following courses are required for the certificate:

LS	100	Introduction to Legal Concepts
LS	238	Civil Procedure I
LS	240	Legal Research and Writing I
LS	241	Legal Research and Writing II

Plus two of the following, or related courses, as approved by the program advisor:

LS	226	Family Law
LS	239	Civil Procedure II: Litigation
LS	244	Estates and Trusts
LS	301	Administrative Law and Regulation
LS	326	Real Estate Law: Property and Conveyancing
LS	328	Legal Management and Administrative Skills
LS	330	Legal Investigation

Professional Studies

Chair: Howard J. Cohen, PhD

Associate Professors: Howard J. Cohen, PhD, University of Michigan; Martin J. O'Connor, JD, University of Connecticut

Assistant Professors: Sorin Iliescu, MS, University of New Haven; Robert E. Massicotte, Jr., MS, University of New Haven; Nelson Dunston, MS, University of Maryland

Practitioners-in-Residence: Mary Galvin, JD, Columbus School of Law of the Catholic University; Mark B. Haskins, MS, University of New Haven

The department of professional studies offers several degree programs for students interested in specific employment-related areas: fire science (technology, administration, and fire/arson investigation), fire protection engineering, and occupational safety and health administration. A number of certificates are offered in these fields, as well as a certificate in paralegal studies and minors in legal/public affairs.

Fire Science

Director: Robert E. Massicotte, Jr., MS

The United States continues to be among those countries worldwide which suffer the highest degree of destruction to life and property from fire. The arson/fraud fire problem continues to contribute to these statistics at an alarming rate.

Concern over this unnecessary loss of life and property has triggered a rapidly growing need for professionals in fire science. The municipal fire service is only one part of this demand for individuals with specialized education in this multidisciplined field. Career opportunities in the public sector include those for municipal firefighters, fire inspectors, fire investigators, fire technicians, and fire protection engineers. Private sector careers include those of industrial firefighters, fire protection specialists, fire protection engineers, fire investigators, and loss control consultants. Government, industry, fire equipment manufacturers and vendors, and the insurance industry are all potential employers.

The University of New Haven offers five undergraduate degrees and four certificate programs designed for those entering the exciting field of fire science. A combination of classroom lectures, laboratory sessions, case studies, and field trips is utilized to give the student the broadest possible exposure in this area of study. Internships are used to allow the student to obtain real-life work experience in this specialized field.

The university also offers graduate certificate programs and a master's degree in fire science for those completing their bachelor's degrees.

Fire Science Club

The Fire Science Club is the campus student activities organization for students with interests in fire science and related fields. This very active group organizes field trips, fire safety and substance abuse programs, and other activities, both on and off campus, throughout the school year.

Student Branch of the Connecticut Valley Chapter of SFPE

The Student Branch of the Connecticut Valley Chapter of the Society of Fire Protection Engineers is the professional society on campus for fire science students. The Student Branch works closely with the Fire Science Club to provide programs and field trips with a strong technical basis.

BS, Fire Science

The bachelor of science in fire science is offered with a choice of three concentrations to allow the student to major in fire science and specialize in an area of interest. The concentration areas are Fire/Arson Investigation, Fire Administration, and Fire Science Technology.

Required Courses

Students earning the BS in fire science are required to complete at least 123 credit hours including the university core curriculum and the common courses for fire science listed below, some of which fulfill requirements of the university core curriculum.

FS	102	Principles of Fire Science Technology
FS	201	Essentials of Fire Chemistry and Physics with Laboratory
FS	205	Fire Protection Hydraulics and Water Supply
FS	207	Fundamentals of Fire Prevention
FS	301	Building Construction Codes and Standards
FS	302	Chemistry of Hazardous Materials
FS	304	Fire Detection and Control
FS	305	Fire Detection and Control Laboratory
FS	325	Fire/Life Safety Codes
FS	404	Special Hazards Control
FS	501	Internship
CH	105	Introduction to General and Organic Chemistry with Laboratory
CS	107	Computers and their Applications

Plus electives chosen with the advisor

Concentration in Fire/Arson Investigation

This concentration is designed to prepare students for careers in fire investigation, arson/fraud detection, and code enforcement in both the public and private sectors. The curriculum provides the educational background required to determine the cause and origin of fires as well as an in-depth study of the laws regarding fire investigations and evidence collection. Students choosing this concentration will complete the requirements for a minor in criminal justice. Students earning the BS in fire science with a concentration in fire/arson investigation must complete 124 credit hours including the university core curriculum, the common courses for fire science majors listed above, and the courses listed below, some of which fulfill requirements of the university core curriculum.

FS	203	Fire and Casualty Insurance
FS	204	Fire Investigation I
FS	313	Fire Investigation II
FS	314	Fire Investigation II Laboratory
FS	408	Fire Protection Law
FS	409	Arson for Profit
CH	105	Introduction to General and Organic Chemistry I with Laboratory
CJ	100	Introduction to Criminal Justice
CJ	102	Criminal Law
CJ	201	Principles of Criminal Investigation
CJ	215	Introduction to Forensic Science
CJ	217	Criminal Procedure I
CJ	218	Criminal Procedure II and Evidence
CJ	221	Juvenile Justice System
		or
CJ	415	Crime Scene Investigation and Pattern Evidence
M	109	Intermediate Algebra
		or
M	127	Finite Mathematics
P	111	Introduction to Psychology
P	336	Abnormal Psychology

Concentration in Fire Administration

This concentration is designed to prepare students for careers in municipal, private, or industrial fire departments. The curriculum provides the educational background to advance through the ranks and become the future leaders of the fire service.

Students earning the BS in fire science with a concentration in fire administration must complete a minimum of 128 credit hours including the university core curriculum, the common courses for fire science majors listed above, and the courses listed below, some of which fulfill requirements of the university core curriculum.

CH	105	Introduction to General and Organic Chemistry I with Laboratory
FS	106	Emergency Scene Operations
FS	204	Fire Investigation I
FS	307	Municipal Fire Administration
FS	405	Emergency Incident Management
FS	408	Fire Protection Law
M	109	Intermediate Algebra
		or
M	127	Finite Mathematics
P	111	Introduction to Psychology
PA	101	Introduction to Public Administration
PA	302	Public Administration Systems and Procedures
		or
PA	305	Institutional Budgeting and Planning
PA	408	Collective Bargaining in the Public Sector
SH	100	Safety Organization and Management
SH	110	Accident Conditions and Controls
		or
SH	200	Elements of Industrial Hygiene

Concentration in Fire Science Technology

This concentration focuses on the technological aspects of fire science. Fire control by design, construction, and fixed fire suppression systems is stressed. A combination of fire science and engineering courses is used to prepare the student to apply basic engineering principles to the fire problem. Fire prevention and code compliance are stressed in this program. Careers in this field are mainly in the private sector; however, these skills are becoming more important in all areas, as the fire service prepares to meet the technical challenges of the future.

Students earning the BS in fire science with a concentration in fire science technology must complete 129 credit hours including the university core curriculum, the common courses for fire science majors listed above, and the courses listed below, some of which fulfill requirements of the university core curriculum.

FS	203	Fire Casualty Insurance
FS	308	Industrial Fire Protection I
FS	311	Fire Protection Fluids and Systems
FS	312	Fire Protection Fluids and Systems Laboratory
FS	425	Fire Protection Plan Review
FS	460	Fire Hazards Analysis

Fire Science Elective

EAS	107P	Introduction to Engineering
EAS	109	Project Planning
EAS	112	Methods of Engineering Analysis (in place of CS 107)
EAS	211	Introduction to Modeling of Engineering Systems
EAS	213	Materials in Engineering Systems
EAS	230	Fundamentals and Applications of Analog Devices
MG	115	Fundamentals of Management
PH	150	Mechanics, Heat, and Waves with Laboratory
PH	205	Electromagnetism and Optics with Laboratory
SH	100	Safety Organization and Management
SH	110	Accident Conditions and Controls
SH	200	Elements of Industrial Hygiene

BS, Fire Protection Engineering

Coordinator: Nelson Dunston, MS

The role of a fire protection engineer is to safeguard life and property from the devastating effects of fire and explosions by applying sound, multidisciplined engineering principles to the fire protection problem. Through a combination of engineering and fire science courses, students learn how to design, construct, and install fire protection systems which prevent or minimize potential losses from fire, water, smoke, or explosions.

Graduates of the fire protection engineering pro-

gram will be qualified to design, evaluate, or test systems responsible for the reduction of fire losses. They will also be prepared to analyze the fire protection defenses of various structures and operations and recommend cost-effective methods of improving the level of protection that is provided.

Careers in this field may be in the private or the public sector. Government, insurance companies, industry, manufacturers, and consultants are prospective employers of fire protection engineers.

Required Courses

Students earning the BS in fire protection engineering must complete 129 credit hours including the university core curriculum and the courses listed below, some of which fulfill requirements of the university core curriculum.

FS	102	Principles of Fire Science
FS	201	Essentials of Fire Chemistry and Physics
FS	205	Fire Protection Hydraulics and Water Supply
FS	304	Fire Detection and Control
FS	305	Fire Detection and Control Laboratory
FS	311	Fire Protection Fluids and Systems
FS	312	Fire Protection Fluids and Systems Laboratory
FS	404	Special Hazards Control
FS	425	Fire Protection Plan Review
FS	450	Fire Protection Heat Transfer
FS	460	Fire Hazards Analysis
EAS	107P	Introduction to Engineering (Project-based)
EAS	109	Project Planning
EAS	112	Methods of Engineering Analysis
EAS	120	Chemistry with Applications to Biosystems
EAS	211	Introduction to Modeling of Engineering Systems
EAS	213	Materials in Engineering Systems
EAS	222	Fundamentals of Mechanics of Materials
EAS	230	Fundamentals and Applications of Analog Devices
EAS	232	Project Management and Engineering Economics

Plus three Fire Science or Engineering electives chosen with the advisor

CH	115	General Chemistry I
CH	117	General Chemistry I Laboratory
M	117	Calculus I
M	118	Calculus II
M	203	Calculus III
M	204	Differential Equations
PH	150	Mechanics, Heat, and Waves with Laboratory
PH	205	Electromagnetism and Optics with Laboratory
E	225	Technical Writing and Presentation
EC	133	Principles of Economics

AS, Fire and Occupational Safety

This two-year associate in science degree offers students a well-rounded, basic program in the fields of occupational safety and fire science.

Many students continue on to earn their bachelor's degrees in occupational safety or fire science. The program is specifically designed for the individual who wishes to enter the private sector in the fields of occupational safety and fire protection.

Career options in this field include industry and insurance.

Required Courses

Students earning the AS in fire and occupational safety must complete 62 credit hours including the university core curriculum for associate's degree programs and the courses listed below, some of which fulfill requirements of the university core curriculum.

FS	102	Principles of Fire Science Technology
FS	201	Essentials of Fire Chemistry and Physics with Laboratory
FS	203	Fire and Casualty Insurance
FS	205	Fire Protection Hydraulics and Water Supply
FS	207	Fundamentals of Fire Prevention
FS	303	Process and Transportation Hazards
FS	308	Industrial Fire Protection I

CS	107	Computers and their Applications
M	109	Intermediate Algebra
		or
M	127	Finite Mathematics
SH	100	Safety Organization and Management
SH	110	Accident Conditions and Controls
SH	200	Elements of Industrial Hygiene

Plus electives chosen with the advisor

Minor in Fire Science

Students wishing to minor in fire science should contact the director of the program. A minimum of 19 credit hours is required. The courses listed below are required unless a substitution is approved by the director of fire science.

Required Courses

FS	102	Principles of Fire Science Technology
FS	201	Essentials of Fire Chemistry and Physics with Laboratory
FS	204	Fire Investigation I
FS	207	Fundamentals of Fire Prevention
FS	301	Building Construction Codes and Standards
FS	303	Process and Transportation Hazards

Fire Science Certificates

The fire science department offers certificates in fire/arson investigation, fire prevention, industrial fire protection, and hazardous materials. To earn a certificate, students must complete 18 or 19 credit hours. Credits earned for a certificate may be applied to an associate's or bachelor's degree in fire science.

Fire/Arson Investigation Certificate

The fire/arson investigation certificate is designed to provide individuals in either the public or private sector with the fundamentals required to determine the cause and origin of fires. Investigative techniques and arson determination are included in this certificate program. Students are required to complete 19 credit hours, including the courses listed below.

Required Courses

FS	102	Principles of Fire Science Technology
FS	203	Fire and Casualty Insurance
FS	204	Fire Investigation I
FS	313	Fire Investigation II
FS	314	Fire Investigation II Laboratory
FS	408	Fire Protection Law
FS	409	Arson for Profit

Fire Prevention Certificate

The Fire Prevention certificate is designed to provide the fundamentals of fire protection and prevention to the individual interested in fire inspection and/or code compliance. The certificate is applicable to both the public and private sectors, with an emphasis on property loss control. Students are required to complete 19 credit hours, including the courses listed below.

Required Courses

FS	102	Principles of Fire Science Technology
FS	201	Essentials of Fire Chemistry and Physics with Laboratory
FS	207	Fundamentals of Fire Prevention
FS	303	Process and Transportation Hazards
FS	325	Fire/Life Safety Codes
FS	404	Special Hazards Control

Industrial Fire Protection Certificate

The industrial fire protection certificate is designed to provide the individual interested in industrial property loss control with the fundamentals related to this field. While focusing on the private sector, these principles are equally important to those in the public sector who interact with those responsible for the protection of commercial and industrial properties. Students are required to complete 18 credit hours, including the courses listed below.

Required Courses

FS	102	Principles of Fire Science Technology
FS	203	Fire and Casualty Insurance
FS	207	Fundamentals of Fire Prevention
FS	308	Industrial Fire Protection I
FS	309	Industrial Fire Protection II
FS	404	Special Hazards Control

Hazardous Materials Certificate

The hazardous materials certificate is designed to provide the fundamentals required for dealing with the manufacture, storage, handling, and shipping of hazardous materials. The principles covered by this certificate are equally appropriate to the public and the private sectors. Students must complete 19 credit hours for this certificate, including the following:

Required Courses

FS	102	Principles of Fire Science Technology
FS	201	Essentials of Fire Chemistry and Physics with Laboratory
FS	302	Chemistry of Hazardous Materials
FS	303	Process and Transportation Hazards
PH	303	Radioactivity and Radiation
SH	200	Elements of Industrial Hygiene

Occupational Safety and Health

Director: Howard J. Cohen, PhD

In recent years, the global community has become painfully aware of the importance of safety procedures and precautions in our everyday survival: the accidental release of lethal gases in India and the United States, the space shuttle disasters, the cyanide deaths from altered Tylenol capsules, to mention only a few cases. Clearly, safety decision-making has been brought to the forefront of corporation management. No employer today can afford to relegate safety to a minor role in the organizational hierarchy.

This great interest in safety issues has generated a significant demand for professional practitioners in the field. Industry, retailing, commerce, communications, construction, and labor unions, as well as local, state, and federal governments, need competent safety specialists.

The demands placed upon the safety professional require a broad background in chemistry, physics, engineering, psychology, and biology as well as specific knowledge in the safety sciences. Our undergraduate programs draw upon the resources of the entire university to educate students in each of these disciplines. In addition to required courses, students choose from among a diversified offering of restricted and free electives with a balance of courses designed to meet the needs and interests of individual students. Upon graduation, our students have received the comprehensive education needed to become successful professionals in occupational safety and health.

In addition to the four-year bachelor of science programs in occupational safety and health administration and technology, the university also offers two-year associate's degree programs and an occupational safety and health certificate. At the graduate level, several programs are offered which include a master of science in occupational safety and health management, a master of science in industrial hygiene, and two graduate certificates.

The Co-op Program

The department participates in the cooperative education program (Co-op), which enables students to combine practical, paid work experience in their career field with college education. For further details see "The Co-op Program," which appears earlier in this catalog, or contact the co-op coordinator for the Henry Lee College of Public Safety.

BS, Occupational Safety and Health Administration

The degrees in occupational safety and health administration include technical courses in safety and health along with broad areas including engineering, management, and the basic sciences to give students a comprehensive background necessary to direct safety functions.

In addition to the requirements for the AS degree as shown below, bachelor's candidates must complete the following courses for a combined total of 123 credit hours:

Required Courses

E	220	Writing for Business and Industry
BI	121-122	General and Human Biology with Laboratory I and II

FS	208	Instructor Methodology
FS	308-309	Industrial Fire Protection I and II
E	220	Writing for Business and Industry
		or
E	225	Technical Writing and Presentation
E	230	Public Speaking and Group Discussion
P	305	Experimental Methods in Psychology
FS	304	Fire Detection and Control
EAS	232	Project Management and Engineering Economics
		or
IE	414	Engineering Management
SH	400	Occupational Safety and Health Legal Standards
SH	401	Industrial Hygiene Measurements
FS	208	Instructor Methodology
FS	304	Fire Detection and Control
IE	204	Engineering Economics
		or
IE	414	Engineering Management
PH	303	Radioactivity and Radiation

Plus 12 additional credit hours of restricted electives, a science methodology elective, a literature/philosophy elective, an art/music/theatre elective, and 3 credit hours of unrestricted electives

AS, Occupational Safety and Health Administration

Students earning the AS in occupational safety and health administration must complete 64 credit hours including the courses listed below:

Core Courses

E	105	Composition
E	110	Composition and Literature
EAS	107	Introduction to Engineering
PH	100	Introduction to Physics with Laboratory
P	111	Introduction to Psychology
CH	105	Introduction to General and Organic Chemistry with Laboratory
CS	107	Computers and their Applications
M	127	Finite Mathematics
HS	101	Foundations of the Western World
		or
HS	102	The Western World in Modern Times

Aesthetic Responsiveness elective

Required Courses

SH	100	Safety Organization and Management
SH	110	Accident Conditions and Controls
SH	200	Elements of Industrial Hygiene
FS	102	Principles of Fire Science Technology
FS	201	Essentials of Fire Chemistry and Physics with Laboratory
BA	100	Leadership in Business
M	228	Elementary Statistics

Plus 6 credit hours of unrestricted electives and 3 credit hours of restricted elective

Occupational Safety and Health Certificate

Coordinator: Howard J. Cohen, PhD

The department offers an occupational safety and health certificate for which students must complete 18 credit hours. This program of study covers the fundamentals of on-the-job safety and health as well as the requirements of OSHA regulations. These courses provide an introduction to dealing with problems typically confronted by safety professionals. Additional introductory courses in business and engineering help to prepare students to interact in the business and regulatory community.

Required Courses

BA	100	Leadership in the Business Community
EAS	107	Introduction to Engineering
SH	100	Safety Organization and Management
SH	110	Accident Conditions and Controls
SH	200	Elements of Industrial Hygiene
SH	400	Occupational Safety and Health Legal Standards

COURSES

Course descriptions are arranged alphabetically by the course prefix code letters as listed below. For the purpose of brevity, course descriptions do not follow traditional rules of grammar and may consist of sentence fragments.

A

A Accounting
AT Art/Visual Arts

B

BA Business Administration
BI Biology

C

CE Civil Engineering
CEN Computer Engineering
CH Chemistry
CJ Criminal Justice
CM Chemical Engineering
CN Chinese
CO Communication
CS Computer Science

D

DH Dental Hygiene
DI Dietetics

E

E English
EAS Engineering and Applied Science
EC Economics
ED Education
EE Electrical Engineering
EN Environmental Science

F

FE Freshman Experience
FI Finance
FR French
FS Fire Science

G

GLS Global Studies
GR German

H

HTM Hotel and Tourism Management
HS History
HU Humanities

I

IB International Business
ID Interior Design
IE Industrial Engineering

J

J Journalism

L

LA Business Law
LG Logistics

M

M Mathematics
ME Mechanical Engineering
MG Management
MK Marketing
MM Multimedia
MR Marine Biology
MU Music

P

P Psychology
PA Public Management
PH Physics
PL Philosophy
PS Political Science

Q

QA Quantitative Analysis

R

RU Russian

S

SC Science
SH Occupational Safety and Health
SO Sociology
SP Spanish
SW Social Welfare

T

T Theatre Arts

ACCOUNTING

A 101 Introduction to Financial Accounting
Deals primarily with reporting the financial results of operations and financial position to investors, managers, and other interested parties. Emphasizes the role of accounting information in decision making. 3 credit hours.

A 102 Introduction to Managerial Accounting
Prerequisite: A 101. The application of accounting in relation to current planning and control, evaluation of performances, special decisions, and long-range planning. Stress is on cost analysis. Additional topics include income tax planning, product costing, and quantitative techniques. 3 credit hours.

A 220 Intermediate Financial Accounting I
Prerequisite: A 101. A rigorous examination of financial accounting theory and practice applicable to the corporate form of business organization. With an emphasis on reporting corporate financial status and results of operations, the course will include the principles governing and the procedures for implementing accounting valuations for revenue, expense, gain, loss, current assets, and deferred charges. 3 credit hours.

A 221 Intermediate Financial Accounting II
Prerequisite: A 220. Continues the emphasis on corporate financial reporting established in A 220. The principles and procedures applicable to accounting valuations for current liabilities, long-term liabilities, deferred credits, and stockholder's equity are examined. Special attention is directed to preparing the cash-flow statement. 3 credit hours.

A 250 Accounting Information Systems
Prerequisite: A 101. This course provides a thorough introduction to basic systems theory, a firm working knowledge of systems analysis and design techniques, and an examination of various transaction cycles in the accounting system. Emphasis is on EDP environments. 3 credit hours.

A 323 Cost Accounting
Prerequisite: A 102. An in-depth examination of the accounting principles and procedures underlying the determination of product costs for manufacturing concerns. Emphasis on job order costing systems. Other topics are budgets, standard costing, and CVP analysis. 3 credit hours.

A 422 Intermediate Financial Accounting III
Prerequisite: A 221. Advanced topics include income tax allocation, pensions and leases, accounting changes, price-level changes, installment sales and consignments, and revenue recognition. 3 credit hours.

A 431 Advanced Financial Accounting
Prerequisites: A 221 and senior standing. Advanced topics in financial reporting, including partnership accounting, consolidations, cost and equity methods, and purchase versus pooling methods. 3 credit hours.

A 433 Auditing and Assurance Services
Prerequisites: A 422, A 250, and senior standing. A general examination of the role and function of the independent auditor in the performance of the attest function. Emphasis will be placed on current auditing pronouncements, the audit report, statistical sampling, evaluation of internal control, and the determination of the scope of an audit. Rules and standards of compilation and review reports are presented. 3 credit hours.

A 435 Federal Income Taxation I
Prerequisites: A 102 and senior standing. An introduction to the federal income tax law including objectives, history, and sources of tax law and administration. Course coverage will be devoted to different types of taxpayers including individuals, corporations, partnerships, limited liability entities, subchapter S corporations, and trusts and estates. The course will explore income tax concepts of accounting methods and periods, income, deduction losses, property transactions, fringe benefits, and retirement plans. 3 credit hours.

A 436 Federal Income Taxation II
Prerequisites: A 102 and A 435. Advanced studies in taxation including the tax consequences of the formation, operation, and termination of corporations, partnerships, and limited liability companies. Course coverage will also be devoted to the alternative minimum tax, related party transactions, estate and gift taxation, financial tax accounting concepts, and ethical responsibilities in tax practice. 3 credit hours.

A 450-454 Special Topics
Prerequisite: A 102. Junior-level standing required unless specified in course schedule description. Selected topics in accounting or taxation of special or current interest. 3 credit hours.

A 597 Practicum
Prerequisites: A 220 and minimum 3.0 GPA in the major. A course of study designed especially for the supervised practical application of previously studied theory in a group setting. Done under the supervision of a faculty sponsor and coordinated with a business organization. 3 credit hours.

A 598 Internship
Prerequisites: A 422 and junior standing. On-the-job experience of accounting in selected organizations. 3 credit hours.

A 599 Independent Study
Prerequisites: A 102 and junior standing. A planned program of individual study under the supervision of a faculty member. 3 credit hours.

ART/VISUAL ARTS

AT 101-102 Introduction to Studio Art I and II
Foundational study in the visual arts designed to heighten the student's aesthetic awareness and to provide an introduction to the study of drawing, painting, and design using a variety of materials. 3 credit hours each.

AT 105 Basic Drawing I
A basic-foundation course which includes a disciplined study in the fundamentals of drawing such as nature studies, perspective, exercises in coordination of hand and eye. 3 credit hours.

AT 106 Basic Drawing II
A continuation of AT 105 with emphasis on perspective and depiction of three-dimensional space and form by two-dimensional means. Study of architectural forms, natural objects, and landscape. 3 credit hours.

AT 122 Graphic Design Production
Prerequisite: AT 100 level course or consent of the instructor. Studio introduction to the technical skills of graphic design including copyfitting type specification, typesetting, layout, and mechanical preparation. 3 credit hours.

AT 201 Painting I
Problems in pictorial composition involving manipulation of form and color. Various techniques of applying pigment will be explored as well as mixing pigments, stretching and priming canvases. 3 credit hours.

AT 202 Painting II
A continuation of AT 201 with further exploration of two-dimensional pictorial arrangements of form and color for greatest visual effectiveness. Students will be encouraged to develop their own personal idiom in the medium. 3 credit hours.

AT 203 Graphic Design I
Basic theoretical design studies concentrate on the development of a design vocabulary consisting of an understanding of form, proportion, composition, rhythm, juxtaposition, progression, and balance. 3 credit hours.

AT 204 Graphic Design II
Prerequisite: AT 203. An investigation of formal aspects of composition, organic and geometric form, graphic translation, and color. Emphasis on concept development, sequencing, and visual logic. 3 credit hours.

AT 209-210 Photography I and II
Introduction to the technical and aesthetic aspects of black and white photography. Camera controls, exposure, development, and printmaking will be covered along with a simultaneous investigation into photographic design, historical tradition, and media use. Photography II puts special emphasis on each student's creating a body of work which possesses a cohesiveness of vision. Further investigation of photographic technique. Laboratory fee; 3 credit hours each.

AT 211 Basic Design I
A basic-foundation course which includes exploration of two-dimensional visual elements–line, color, light and dark, shape, size, placement, figure-ground, and their effective use. For those wishing basic art understanding. 3 credit hours.

AT 212 Basic Design II
A continuation of AT 211, with concentration on three-dimensional elements of design including positive and negative volumes, surfaces, structural systems, and other elements, employing a variety of materials. 3 credit hours.

AT 213 Color
An intensive exploration of color perception and interaction with manipulation of form and color for greatest effectiveness in pictorial compositions. 3 credit hours.

AT 221 Typography I
Prerequisites: AT 203, AT 211. An introduction to the form, language, terminology, and use of typography. Letters, words, and text arrangements form the components in these theoretical studies, which lead to simple communication exercises. 3 credit hours.

AT 222 Typography II
Prerequisite: AT 221. Exploration of typographic structures and hierarchies as well as formal aspects of text. The typographic principles are applied to complex communication problems such as publication design and information graphics. 3 credit hours.

AT 225 Photographic Methods
Prerequisite: AT 209. An exploration of ideas, experiments, and investigations in alternative photographic processes. Includes toning, cyanotype printing, gum bichromate, platinum, and palladium. Also covered will be negative manipulation, hand-applied color, and pinhole cameras. Laboratory fee; 3 credit hours.

AT 231 History of Art I
Western art from cave art through the Middle Ages to Gothic. This course seeks to understand expressive, social, cultural, political, and economic aspects of the cultures in which specific art styles and visual developments emerged. This course forms the basic vocabulary for History of Art II. Includes economic and technological changes in the societies and their reflections in art. Appropriate for business and engineering students. 3 credit hours.

AT 232 History of Art II
Western art from the Renaissance to the twentieth century in Europe and America; a continuation of AT 231. 3 credit hours.

AT 302 Figure Drawing
Prerequisite: AT 105 or consent of the instructor. Study of drawing which concentrates on the human figure. 3 credit hours.

AT 304 Sculpture I
The exploration of three-dimensional materials for maximum effectiveness in expressive design. Experimentation with clay, plaster, wood, stone, canvas, wire screening, metal, found objects. A basic understanding of major, fundamental methods: casting and carving. Laboratory fee; 3 credit hours.

AT 305 Sculpture II
A continuation of AT 304 with further exploration of three-dimensional materials and the possibilities they present for creative visual statements. Laboratory fee; 3 credit hours.

AT 309 Photographic Design
Prerequisite: AT 209. Introduction to basic materials and techniques of black and white photography used in graphic design. The relation between image and type as well as sequencing and the extended print will be explored along with collage and basic bookmaking. Laboratory fee; 3 credit hours.

AT 310 Photographic Lighting
Prerequisite: AT 209. Aesthetic and technical understanding of light. Use of natural and artificial lighting systems and methods for working with both color and black and white film. Emphasis on the portrait and still life image as well as creative problem solving. Laboratory fee; 3 credit hours.

AT 311 Color Photography
Prerequisite: AT 209. Theory and practice of color photography Study of current color photographic materials and processes. Laboratory fee; 3 credit hours.

AT 315 Printmaking
The expressive potential of the graphic image through the techniques of monoprints, etching, silkscreening, and photo/computer scanned printing processes. Laboratory fee; 3 credit hours.

AT 322 Illustration
A solid foundation in the techniques of creative illustration. Various media and their expressive possibilities will be studied: charcoal, pencil, pen and ink, wash, colored pencils, acrylic. Focuses on application of these techniques. 3 credit hours.

AT 331 Contemporary Art
Focus on art since 1945. The developments of the present stem from ideas emanating from the 1870s–especially Impressionism; this course seeks to understand these connections. Emphasis on economic, historical, and technological developments. Appropriate for business, communication, history, and engineering students. 3 credit hours.

AT 333 Survey of Afro-American Art
Artistic creation by African-Americans in the United States from the Colonial period to the present. Consideration of African cultural influences. Analysis of modern trends in the work of black artists. 3 credit hours.

AT 401 Studio Seminar I
Prerequisites: AT 101-102, AT 201, AT 302 or AT 209, and art electives. Drawing on development through their previous study, students will concentrate on major projects in the areas of their choice. 1-4 credit hours.

AT 402 Studio Seminar II
Prerequisite: AT 401. Continua-tion of Studio Seminar I. 1-4 credit hours.

AT 403-425 Selected Topics
Selected topics of special or current interest in applied art or history of art. Variable credit hours.

AT 599 Independent Study
Prerequisites: consent of the instructor and department chair. Opportunity for the student, under the direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 1-3 credit hours.

BUSINESS ADMINISTRATION

BA 100 Leadership in the Business Community
Leaders and their behavior as it pertains to the role of the leader within the organization are the focus for this participatory course. Theory and current research regarding leadership are discussed as well as the prerequisites, knowledge, and practices required for successful leadership. Student participation will be enhanced through use of videotape, role playing, writing activities, and presentations. 3 credit hours.

BIOLOGY

Biology courses marked with an asterisk (*) are usually scheduled every other academic year. Courses marked with the symbol (†) may be offered at the discretion of the department.

BI 121-122 General and Human Biology with Laboratory I and II
An introduction to the study of biology which integrates biological principles and human biology. Major topics covered are biochemistry, cell and molecular biology, genetics, anatomy and physiology, behavior, ecology, and evolution. The laboratory involves experimentation and demonstration of principles covered in lecture. BI 121 is a prerequisite for BI 122. Laboratory fee; 4 credit hours each term.

BI 125 Contemporary Issues in Biology with Laboratory
This course explores topics related to biological sciences. The goal is to foster an informed citizenship prepared for current biological debates. Students will learn the relevant biological principles in lecture and laboratory. The dynamic nature of scientific investigation may require adjustment and variation in the specific topics covered each year. Topics may include emerging diseases, cardiovascular health, reproduction, genetics, evolution, ecology, and conservation. Laboratory fee; 4 credit hours.

BI 250 Invertebrate Zoology with Laboratory
Prerequisite: BI 122 or BI 254. A survey of invertebrate phyla focusing on taxonomy, evolutionary relationships, structure and function, physiological adaptations, and life modes. Laboratory includes examination of the structure and anatomy of representative taxa from the phyla, experiments and observations on behavior, and responses to varying environmental conditions. Laboratory fee; 4 credit hours.

BI 253-254 Biology for Science Majors with Laboratory I and II
Prerequisite or corequisite: M 109. A discussion of the principles of biological organization from the molecular level through the ecological. The basic course for biology and environmental studies majors. Laboratory fee; 4 credit hours each term.

BI 259-260 Vertebrate Anatomy and Physiology with Laboratory I and II
Prerequisite: BI 121, BI 122, BI 253, or BI 254. Examination of structure and function of vertebrate organ systems with an emphasis on human systems. Laboratory fee; 4 credit hours each term.

BI 261 Introduction to Biochemistry
Prerequisite: CH 105 or equivalent. An introduction to biochemistry including the study of pH, water bioenergetics, enzymes, and the

structure, function, and metabolism of carbohydrates, proteins, lipids, and nucleic acids. A non-laboratory course for students in dental hygiene and dietetics. Not open to biology majors. 3 credit hours.

BI 301 Microbiology with Laboratory
Prerequisites: BI 121 or BI 253 and one college course in general chemistry. A history of microbiology and a survey of microbial life. Includes viruses, rickettsia, bacteria, blue-green algae, and fungi; their environment, growth, reproduction, metabolism, and relationship to humans. Laboratory fee; 4 credit hours.

***BI 303 Cells and Tissues with Laboratory**
Prerequisite: BI 121 or BI 253. Microscopic and chemical structures of normal tissues, organs, and their cellular constituents as related to function. Laboratory includes microscopic observation, tissue staining, and slide preparation. Laboratory fee; 4 credit hours.

BI 304 Immunology with Laboratory
Prerequisites: BI 121 or BI 253 and one college course in general chemistry. The nature of antigens and antibodies, formation and action of the latter, other immunologically active components of blood and tissues, and various immune reactions. Laboratory emphasizes current antibody methodology. Laboratory fee; 4 credit hours.

***BI 305 Developmental Biology with Laboratory**
Prerequisite: BI 122 or BI 254. A survey of developmental biology integrating classical embryology with modern concepts of cellular development. Laboratory will include examination of embryonic serial sections as well as modern cellular and molecular studies of development. Laboratory fee; 4 credit hours.

BI 306 Genetics
Prerequisite: BI 253 or BI 121. A survey of modern genetics that integrates the principles and concepts discovered in viruses, bacteria, and mammals including humans. Topics include organization of the chromosome, transmission genetics, DNA fingerprinting, linkage and mapping, mutations and chromosomal aberrations, organelle genetics, genetic engineering, population genetics, and evolution. 3 credit hours.

BI 308 Cell Biology with Laboratory
Prerequisites: BI 121 or BI 253, one college course in general chemistry, and one college course in general physics. Basic theories of physiology as applied to cells. Emphasis on cellular structure and function as well as cell-cell interactions in multicellular organisms. Laboratory will stress practical aspects and modern techniques. Labora-tory fee; 4 credit hours.

BI 311 Molecular Biology with Laboratory
Prerequisite: BI 121, or BI 253, plus CH 115 and 117. An in-depth discussion of nucleic acids, the flow of information from nucleic acids to protein and the control of gene activity. Laboratory emphasizes the techniques of modern molecular biology. Laboratory fee; 4 credit hours.

BI 320 Ecology with Laboratory
Prerequisites: CH 116 and BI 254 (or BI 122 with permission of instructor). An investigation of the major subdisciplines of ecology including organismal, population, community ecosystem, and landscape ecology. Human impacts and environmental management and assessment are also considered. Laboratory includes designing ecological studies, field sampling techniques, ecological analysis, using global positioning systems in ecological studies, and gathering information on the Internet. Several weekend field classes are required. Laboratory fee; 4 credit hours.

†BI 433 Medical Microbiology with Laboratory
Prerequisites: BI 301, CH 115. A study of the more common diseases caused by bacteria, fungi, and viruses, including their etiology, transmission, laboratory diagnosis, and control. Laboratory fee; 4 credit hours.

BI 461 Biochemistry with Laboratory
Prerequisites: CH 201, CH 202, CH 203, and CH 204. A survey of biochemistry including a discussion of pH, buffers, water, bioenergetics, oxidative phosphorylation, enzymology, metabolic regulation, and the structure, function, and metabolism of carbohydrates, proteins, lipids, nucleic acids, vitamins, and cofactors. Laboratory exercises are primarily designed to concentrate on various experimental techniques

including electrophoresis, chromatography, spectrophotometry, centrifugation, and enzymology. Laboratory fee; 4 credit hours.

BI 493 Evaluation of Scientific Literature
Prerequisites: science major with junior or senior standing. In this seminar-format course, the student will be trained to present and critically analyze research papers. In the first part of the semester students will be instructed in critically reading and evaluating primary research articles. In the latter part of the semester the students will present primary research articles from the recent and historical literature and a review topic in a seminar format. Active class participation in seminars is mandatory. 3 credit hours.

BI 498 Internship
Prerequisites: junior or senior standing; biology or environmental science major. Supervised field experience for qualified students in areas related to biology and/or environmental science. Minimum of 150 hours of field experience required. 3 credit hours.

BI 501 Protein Biochemistry and Enzymology
Prerequisites: BI 461, CH 201-204. First in a series of advanced biochemistry courses; examines the relationship between protein structure and function. Topics include properties of proteins and amino acids, protein folding, enzyme kinetics, and enzyme regulation. 3 credit hours.

BI 503 Biochemistry of Nucleic Acid
Prerequisites: BI 461, CH 201-204. Second course in the advanced biochemistry course series; examines cellular metabolism, the transfer of chemical energy, and the biosynthesis of amino acids, carbohydrates, fatty acids, and nucleotides. 3 credit hours.

BI 506 Genomics
Prerequisite: BI 311. This course combines information from the most recent genomic projects with traditional genetic research methods to provide novel understanding of the role of the genome as the blueprint of life. Emphasis is placed on exploring the expression of genes in context of the activity and function of the whole genome. Topics include genome anatomy, functional genomics, regulation of the activity of the genome, genome evolution, proteomics, genome engineering, and computational genomics. 3 credit hours.

***BI 510 Environmental Health**
Prerequisites: BI 260 and a college chemistry course. The emphasis is on the health effects of environmental and occupational pollutants and on the spread and control of communicable diseases. Toxicological and epidemiological techniques are discussed. 3 credit hours.

BI 511 Molecular Biology of Proteins with Laboratory
Prerequisites: BI 311 and BI 461. Because the techniques for working with proteins are basic to the cell and molecular biologist and extend beyond the understanding of basic protein biochemistry, this course provides a theoretical understanding of methods commonly utilized for protein/peptide analysis. In the laboratory students will isolate proteins from various tissues or expression systems and analyze them by one–and two–dimensional polyacrylamide gel electrophoresis. Laboratory fee; 4 credit hours.

BI 513 Molecular Biology of Nucleic Acids with Laboratory
Prerequisite: B503 or permission of the instructor. Examination of gene expression and the techniques available for manipulating DNA, RNA, and protein expression. Course utilizes an extensive laboratory component to instruct students in the practical and technical aspects of working with nucleic acids. Laboratory fee; 4 credit hours.

BI 520 Bioinformatics
Prerequisite: BI 311. Students will become familiar with uses of computers in cellular and molecular biology and will be introduced to databases that are presently available for nucleic acid and protein sequences as well as literature citations. Students will work with modeling software which looks for potential secondary structures within both protein and DNA sequences. 3 credit hours.

BI 590 Special Topics in Biology/Science
Course(s) covering topics in biology or science which are of special or current interest. 1-4 credit hours.

BI 595-596 Laboratory Research I and II
Prerequisites: biology major, consent of the department. Choice of a

research topic, literature search, planning of experiments, experimentation, and correlation of results in a written report, under the guidance of a department faculty member. Three hours of work per week required per credit hour. Laboratory fee; 1-6 credit hours.

BI 599 Independent Study
Prerequisites: biology major, consent of the department. Weekly conferences with advisor. Three hours of work per week required per credit hour. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest. A written report of the work carried out is required. 1-3 credit hours; maximum of 6.

CIVIL ENGINEERING

CE 201 Statics
Prerequisites: PH 150, M 117. Composition and resolution of forces in two and three dimensions. Equilibrium of forces in stationary systems. Analysis of trusses, frames, and machines. Centroids and second moments of areas, distributed forces and friction. 3 credit hours.

CE 202 Strength of Materials I
Prerequisite: CE 201. Elastic behavior of structural elements under axial, flexural, and torsional loading. Shear and bending moment diagrams. Stress in and deformation of members, including beams, columns, and connections. 3 credit hours.

CE 203 Elementary Surveying
Prerequisite: M 115 or permission of instructor. Theory and practice of surveying measurements using tape, level, and transit. Field practice in traverse surveys and leveling. Traverse adjustment and area computations. Adjustment of instruments, error analysis. 3 credit hours.

CE 205 Statics and Strength of Materials
Prerequisite: PH 150. Effects and distribution of forces on rigid bodies at rest. Various types of forces systems, friction, center of gravity, centroids, and moments of inertia. Relation between externally applied loads and their internal effects on nonrigid, deformable bodies. Stress, strain, Hooke's law, Poisson's ratio, bending and torsion, shear and moment diagrams, deflection, combined stress, and Mohr's circle. 4 credit hours.

CE 206 Engineering Geology
Introduction to relationship of geologic processes and principles to engineering problems. Topics include engineering properties of rock as a construction and foundation material, soil formation and soil profiles, and subsurface water. 3 credit hours.

CE 218 Civil Engineering Systems
Prerequisites: CE 205 or EAS 222 (may be taken concurrently), M 118. An introduction to civil engineering design. Analyze needs, determine capacities, and develop design alternatives for civil engineering systems. Structures, water and wastewater facilities, geotechnical and transportation systems are studied. 3 credit hours.

CE 301 Transportation Engineering
Prerequisite: M 117. A study of planning, design, and construction of transportation systems including highways, airports, railroads, rapid transit systems, and waterways. 3 credit hours.

CE 302 Building Construction
Introduction to the legal, architectural, structural, mechanical, and electrical aspects of building construction. Principles of drawing and specification preparation and cost estimating. 3 credit hours.

CE 304 Soil Mechanics
Prerequisite: CE 205 or EAS 222. Soil classifications. Methods of subsurface exploration. Design principles are related to the potential behavior of soils subjected to various loading conditions. Seepage analysis. 3 credit hours.

CE 306 Hydraulics
Prerequisites: M 204 and EAS 224 or permission of instructor. The mechanics of fluids and fluid flow. Fluid statics, laminar and turbulent flow. Energy, continuity, and momentum. Analysis and design of pipes and open channels. Orifices and weirs. 3 credit hours.

CE 309 Water Resources Engineering
Prerequisite: CE 306. Study of principles of water resources engineering including surface and ground water hydrology. Design of water supply, flood control, and hydroelectric reservoirs. Hydraulics and design of water supply distribution and drainage collection systems including pump and turbine design. Principles of probability concepts in the design of hydraulic structures. General review of water and pollution control laws. 3 credit hours.

CE 312 Structural Analysis
Prerequisite: CE 205 or CE 202 or EAS 222. Basic structural engineering topics on the analysis of beams, trusses, and frames. Topics include load criteria and influence lines; force and deflection analysis of beams and trusses; analysis of indeterminate structures by approximate methods, superposition, and moment distribution. Computer applications and a semester-long design-analysis project requiring engineering decisions. 4 credit hours (two hours lecture, two hours discussion).

CE 315 Environmental Engineering
Prerequisites: CH 115, CH 117, CE 306. Introduction to water supply and demand. Water quantity and quality. Design and operation principles of water and wastewater treatment, disposal, and reuse systems. Collection, recycling, and disposal practices of solid wastes. Fundamentals of air pollution and air pollution control. 3 credit hours.

CE 323 Mechanics and Structures Laboratory
Prerequisite: CE 312 (may be taken concurrently). Experiments covering mechanics and structural engineering. The response of metals and wood to different loading conditions will be examined. Laboratory instrumentation will be studied. Laboratory procedures, data collection, interpretation, and presentation will be emphasized. 2 credit hours.

CE 327 Soil Mechanics Laboratory
Prerequisite: CE 304 (may be taken concurrently). Experiments and laboratory testing in geotechnical engineering. Lab testing includes classification, density, hydraulic conductivity, shear strength, and consolidation tests. Laboratory procedures and data collection, interpretation, and presentation will be discussed. 2 credit hours.

CE 328 Hydraulics and Environmental Laboratory
Prerequisite: CE 315 (may be taken concurrently). Fundamentals of data collection, analysis, and presentation. Principles of technical report writing. Laboratory methods in hydraulics and environmental engineering. Experi-ments include pipe and open channel flow; analysis of various hydraulics structures, pumps and other hydraulic machinery; titrimetric, gravimetric, and instrumental methods in water/ wastewater quality testing. 2 credit hours.

CE 398 Internship
Prerequisite: 60 credit hours toward the BS degree. A partnership consisting of the student, faculty, and employers/organizations providing exposure to and participation in a working engineering environment. The internship will translate classroom knowledge to a professional work environment, and the student will work and learn with practicing engineers while gaining professional experience. A minimum of 300 hours performing related engineering duties is required. No credit.

CE 401 Foundation Design and Construction
Prerequisite: CE 304 or consent of instructor. Application of soil mechanics to foundation design, stability, settlement. Selection of foundation type–shallow footings, deep foundations, pile foundations, mat foundations. Subsurface exploration. 3 credit hours.

CE 403 City Planning
Prerequisite: senior status or permission of instructor. Engineering, social, economic, political, and legal aspects of city planning. Emphasis placed on case studies of communities in Connecticut zoning. Principles and policies of redevelopment. 3 credit hours.

CE 404 Water and Wastewater Engineering
Prerequisite: CE 315. Physical, chemical, and biological aspects of water quality and pollution control. Study of unit operations and processes of water, wastewater, and wastewater residuals treatment. Emphasis on hydraulic and process design of water pollution control facilities. 3 credit hours.

CE 405 Indeterminate Structures
Prerequisites: CS 110 and ME 307 or CE 312, and ME 204 or EAS 222. The analysis of statically indeterminate structures. Topics include approximate methods, moment distribution, conjugate beam, energy methods, influence lines, and an introduction to matrix methods. Computer applications and a project requiring structural engineering decisions. 3 credit hours.

CE 407 Professional and Ethical Practice of Engineering
Prerequisite: senior status or permission of instructor. Principles of engineer-client, engineer-society, and owner-contractor relationships examined from ethical, legal, and

professional viewpoints. Examination of codes of ethics and preparation of contract documents. 3 credit hours.

CE 408 Steel Design and Construction
Prerequisite: CE 312. Analysis, design, and construction of steel structures. Topics include tension, compression, and flexural members; connections; members subjected to torsion; beam-columns; fabrication, erection, and shop practice. Designs will be based on Load Resistance Factor Design (LRFD). 3 credit hours (two hours lecture, two hours discussion).

CE 409 Concrete Design and Construction
Prerequisite: CE 312. Analysis and design of reinforced concrete beams, columns, slabs, footings, retaining walls. Fundamentals of engineering shop drawings. 3 credit hours (two hours lecture, two hours discussion).

CE 410 Land Surveying
Prerequisite: CE 203 or consent of instructor. A study of boundary control and legal aspects of land surveying including deed research, evidence of boundary location, deed description, and riparian rights. Theory of measurement and errors, position precision, state plane coordinate systems, photo-gammetry. 3 credit hours.

CE 411 Highway Engineering
Prerequisite: CE 301 or consent of instructor. Highway economics and financing. Study of highway planning, geometric design, and capacity. Pavement and drainage design. 3 credit hours.

CE 412 Wood Engineering
Prerequisite: CE 205 or CE 202 or EAS 222. Study of the growth and structure of wood and their influence on strength and durability, preservation, and fire protection. The analysis and design of structural members of wood using the Allowable Stress Design method (ASD) including beams, columns, and connections. The design of wood structures. Discussion of Load Resistance Factor Design (LRFD). 3 credit hours (two hours lecture, two hours discussion).

CE 413 Masonry Engineering
Prerequisite: CE 205 or EAS 222. The design and analysis of brick and concrete masonry non-reinforced and reinforced structures. Strength, thermal, fire, and sound characteristics, testing, and specifications. 3 credit hours.

CE 414 Route Surveying
Prerequisite: CE 203. A continuation of elementary surveying covering principles of route surveying, stadia surveys, practical astronomy, aerial photography, adjustments of instruments. Field problems related to classroom designs. 3 credit hours.

CE 415 Traffic Engineering
Prerequisite: CE 301 or junior status. Traffic flow theory including data collection, data analysis, freeways, multilane highways, signalized and unsignalized intersections, intersection signal coordination. Students will be taught how to use several computer programs to analyze traffic flow along roadways. Projects will deal with actual locations in the area. 3 credit hours.

CE 450-454 Special Topics
Selected topics of special or current interest in the field of civil engineering. 1-3 credit hours.

CE 500 Senior Project I
Prerequisite: senior status. An introduction to project planning and presentation. This course will prepare the student for professional practice by teaching organizational skills, scheduling, technical writing for a lay audience, and oral presentation. Students will begin working on their senior design project and use this preliminary work in their course assignments. Oral and written presentations will be given to update the class on the progress of the project. 3 credit hours.

CE 501 Senior Project II
Prerequisite: CE 500. Supervised individual or group project. The project may be the preparation of a set of contract documents for the construction of a civil engineering facility, research work with a report, or a project approved by the faculty advisor. 3 credit hours.

CE 505 Solid Waste Management
Prerequisite: CE 315. Characteristics, volumes, collection, and disposal of solid waste and refuse. Design of processing, recycling, and recovery equipment; landfill design and operation; resource recovery; incineration. 3 credit hours.

CE 520 Engineering Hydrology
Prerequisite: CE 309. Theory, methods, and applications of hydrology to contemporary engineering problems. Methods of data collection and analysis as well as design procedures are presented for typical engi-

neering problems. Specific topics to be considered within this framework include the rainfall/runoff process, hydrograph analysis, hydrologic routing, urban runoff, storm water models, and flood frequency analysis. 3 credit hours.

CE 523 Open Channel Hydraulics
Prerequisite: CE 309. Basic theories of open channel flow will be presented and corresponding equations developed. Methods of calculating uniform/steady flow; gradually varied flow; and rapid, spatially varied, unsteady flow will be investigated. Flow through bridge piers, transitions, and culverts; backwater curves and the design of open channels. 3 credit hours.

CE 599 Independent Study
Prerequisites: consent of instructor and department chair. Opportun-ity for the student to explore an area of interest under the direction of a faculty member. Course must be initiated by the student. 1-3 credit hours.

COMPUTER ENGINEERING

CEN 398 Internship
Prerequisite: junior standing. A partnership consisting of the student, faculty, and employers/organizations providing exposure to and participation in a working engineering environment. The internship will translate classroom knowledge to a professional work environment, and the student will work and learn with practicing engineers while gaining professional experience. A minimum of 300 hours performing related engineering duties is required. No credit.

CEN 457 Design Preparation
Prerequisite: senior standing. This course provides the student time and guidance in selecting a topic for the senior design course (CEN 458), which follows this one. Suitable design projects may be suggested by the student, the faculty, or contacts in industry. Projects involving both hardware and software are encouraged. Each student carries out a literature search on the topic, prepares a written proposal with a plan of action for the project, obtains approval from the faculty advisor, makes oral reports of work in progress, and presents a formal project proposal. 3 credit hours.

CEN 458 Senior Design Laboratory
Prerequisite: CEN 457. Students complete the design planned in CEN 457. This course provides students with experience at a professional level with engineering projects that involve analysis, design, construction of prototypes, and evaluation of results. Projects involving both hardware and software are encouraged. A final report presentation and a formal written report are required. 3 credit hours.

CHEMISTRY

CH 103 Introduction to General Chemistry
Introductory course for students without a high school chemistry background. Fundamentals of chemistry including such topics as elements, compounds, nomenclature, and practical applications. CH 104 is taken concurrently with CH 103. 3 credit hours.

CH 104 Introduction to General Chemistry Laboratory
To be taken with CH 103. Experiments include systems of measurement, the measurement of physical properties, determination of percentage of composition, chemical formulas, and chemical reactions. 1 credit hour.

CH 105 Introduction to General and Organic Chemistry with Laboratory
Fundamentals of general and organic chemistry: atomic structure and properties of compounds, stoichiometry and reactions, energy relationships, states of matter, solutions, hydrocarbons, and classes of organic compounds. 4 credit hours.

CH 115 General Chemistry I
Prerequisite: High school algebra or M 109, CH 103, CH 105 or one unit of high school chemistry or written qualifying exam. Brief review of fundamentals including stoichiometry, atomic structure, and chemical bonding. Other topics include thermochemistry, gas laws, and an introduction to organic and biochemistry. Intended primarily for science/engineering majors. CH 117 is taken concurrently with CH 115. 3 credit hours.

CH 116 General Chemistry II
Prerequisites: CH 115, CH 117 or the equivalent. Topics include properties of solutions; nuclear chemistry; rates of chemical reactions; chemical equilibria including pH, acid-base, common ion effect,

buffers, and solubility products; thermodynamics. Problems in each area include environmental applications. CH 118 is taken concurrently with CH 116. 3 credit hours.

CH 117 General Chemistry I Laboratory
To be taken with CH 115. Experiments include percent composition, stoichiometry, heats of reaction, gas laws, types of reactions and simple organic synthesis. 1 credit hour.

CH 118 General Chemistry II Laboratory
To be taken with CH 116. Experiments include colligative properties of solutions, quantitative measurements of chemical reaction rates, equilibrium constants, the common ion effect, pH, buffers, and electrochemical cells. 1 credit hour.

CH 201-202 Organic Chemistry I and II
Prerequisites: CH 116, CH 118. Common reactions in aliphatic and aromatic chemistry with emphasis on functional groups and reaction mechanisms. CH 203 and CH 204 are taken concurrently with CH 201-202. 3 credit hours each term.

CH 203-204 Organic Chemistry I and II Laboratory
To be taken with CH 201-202. Some of the techniques, reactions, and syntheses commonly employed in the organic chemistry laboratory are covered on microscale level including qualitative organic analysis and FTIR analysis. 1 credit hour each term.

CH 211 Quantitative Analysis with Laboratory
Prerequisites: CH 116, CH 118. Theory and applications of acid-base, solubility, complex-formation, and oxidation-reduction equilibria to quantitative chemical analysis; introduction to statistics and evaluation of results. Laboratory analysis of samples by gravimetric and volumetric methods. 4 credit hours.

CH 221 Instrumental Methods of Analysis with Laboratory
Prerequisites: CH 201, CH 203, CH 211, or permission of instructor. Theory and applications of various instrumental methods with emphasis on ultraviolet, visible, atomic absorption, fluorescence, infrared and nuclear magnetic resonance spectroscopy; mass spectrometry; gas and liquid chromatography; and potentiometry. Laboratory analysis of samples by methods discussed in the lecture. 4 credit hours.

CH 321-322 Plastics and Polymer Chemistry I and II
Prerequisites: CH 116, CH 118, CH 202, CH 204. All phases of the plastics and polymers field, including the chemistry involved, methods of production, physical properties, and the uses of specific polymers. 3 credit hours each term.

CH 331-332 Physical Chemistry I and II
Prerequisites: CH 116, PH 205, M 203 (may be taken concurrently). Kinetic theory of gases, thermodynamics, phase equilibria, transport and surface phenomena, kinetics, quantum mechanics, atomic and molecular spectroscopy. 3 credit hours each term.

CH 333-334 Physical Chemistry I and II Laboratory
To be taken with CH 331-332. Laboratory training in vacuum line techniques and real-time collection of temperature, pressure, and spectrophotometric data by microcomputer. Experiments include diffusion, velocity, and heat capacities of gases; calorimetry; phase diagrams of mixtures; electro-chemical properties, kinetics of fast reactions, enzyme and oscillating reactions; rotational-vibrational spectroscopy. 1 credit hour each term.

CH 341 Synthetic Methods in Chemistry
Prerequisites: CH 202, CH 204, CH 221. A one-semester laboratory course covering the synthesis and characterization of inorganic and organic compounds. Performance of a variety of reactions and chemical manipulations with a focus on advanced laboratory techniques: handling air-sensitive materials, use of cryogenic conditions, separation and purification, isolation of natural products, experiment design, and safety procedures. A selection of methods for transition metal, main-group element, and aromatic and aliphatic organic syntheses. Characterization of compounds by UV, IR, NMR, mass spectrometry, and other instrumental methods. Eight hours of laboratory per week. 4 credit hours.

CH 411 Chemical Literature
Prerequisites: CH 202, CH 204, CH 332. Acquaints the student with the chemical literature and its use. Assignments include library searches and online STN searching. 1 credit hour.

CH 412 Seminar
Prerequisite: CH 411. The student researches a specific current topic in chemical research or applied chemistry and presents a formal seminar to the faculty and students. 1 credit hour.

CH 451 Thesis with Laboratory
Prerequisites: CH 202, CH 204, CH 211, CH 221, CH 332. An original investigation in the laboratory and/or library under the guidance of a member of the department. A final thesis report is submitted. 2 credit hours.

CH 452-455 Special Topics in Chemistry
Prerequisite: consent of instructor. In-depth study of topics chosen from areas of particular and current interest to chemistry and chemical engineering students. 1-4 credit hours.

CH 471 Industrial Chemistry
Prerequisites: CH 202, CH 211, CH 221, CH 332. A course to bridge the gap from the academic to the industrial world. Topics include material accounting, energy accounting, chemical transport, reactor design, process development and control. 3 credit hours.

CH 501 Advanced Organic Chemistry
Prerequisites: CH 202, CH 204. This course focuses on four topics: mechanisms of organic chemistry reactions, fundamentals of synthesis of complex molecules, organic chemistry of biologically important molecules, and an introduction to medical chemistry. An underlying theme throughout this course is the relationship between chemical structure and the function and reactivity of organic compounds. 3 credit hours.

CH 521 Advanced Inorganic Chemistry
Prerequisite: CH 331. Corequisite: CH 332. Review of atomic structure and introduction to group theory and symmetry. The chemistry of transition metal complexes and organometallic compounds with emphasis on bonding and structure, physical and chemical properties, and reaction mechanisms including catalysis and photochemistry. Bioinorganic chemistry and ionic solids will be covered as time permits. 3 credit hours.

CH 599 Independent Study
Prerequisite: consent of instructor. Opportunity for the student under the direction of a faculty member to explore an area of interest. This course may be used to do preliminary work on the topic studied for Thesis (CH 451). 1-4 credit hours.

CRIMINAL JUSTICE

CJ 100 Introduction to Criminal Justice
Survey of criminal justice system with emphasis on prosecution, corrections, and societal reaction to offenders. Retribution, rehabilitation, deterrence, and incapacitation serve as generic frames of reference and theoretical points of departure for analyzing the dispositional and correctional processes. The course focuses on the process–from the police and prosecution through the courts; from the courts through the correctional system. 3 credit hours.

CJ 102 Criminal Law
The scope, purpose, and definitions of substantive criminal law: criminal liability, major elements of statutory and common law offenses (with some reference to the Connecticut Penal Code), and significant defenses. 3 credit hours.

CJ 105 Introduction to Security
General survey of the major historical, legal, and practical developments and problems of security. Course stresses the components, organization, and objectives of security; the trend toward professionalization; the role of security in the public and private sectors and its relationship to management. 3 credit hours.

CJ 201 Principles of Criminal Investigation
Introduction to criminal investigation in the field. Conducting the crime scene search, interview of witnesses, interrogation of suspects, methods of surveillance, and the special techniques employed in particular kinds of investigation. 3 credit hours.

CJ 203 Security Administration
An overview of security systems found in retail, industrial, and governmental agencies; the legal framework for security operations; and the administrative and procedural processes in security management. 3 credit hours.

CJ 204 Forensic Photography with Laboratory
Introduction to basic techniques, material, and other aspects of crime scene photographs. Theory and practice of photographic image formation and recordings. Laboratory

exercises with emphasis on homicide, sex offenses, arson, and accident photograph techniques. Laboratory fee; 3 credit hours.

CJ 205 Introduction to Forensic Psychology
Prerequisites: CJ 100, P111. This course is intended to provide an overview of the various applications of psychology to forensic settings. Topics include criminal investigation and profiling, personnel selection, dynamics of violence and victimology, eyewitness testimony, trial processes, and a variety of other areas within the criminal and civil justice systems. 3 credit hours.

CJ 209 Correctional Treatment Programs
Prerequisite: CJ 100. Various treatment modalities employed in the rehabilitation of offenders. Field visits to various correctional treatment facilities such as halfway houses and community-based treatment programs. 3 credit hours.

CJ 210 Ethnic and Gender Issues in Criminal Justice
Introduction to issues of diversity within the criminal justice system. The course will focus on prejudice and discrimination along with other special problems experienced by women, gays, and various ethnic and racial minority groups in dealing with the criminal justice system. 3 credit hours.

CJ 215 Introduction to Forensic Science
Prerequisite: CJ 201. A classroom lecture/discussion session and a laboratory period. Topics include the recognition, identification, individualization, and evaluation of physical evidence such as hairs, fibers, chemicals, narcotics, blood, semen, glass, soil, fingerprints, documents, firearms, and tool marks. Laboratory fee; 3 credit hours.

CJ 217 Criminal Procedure I
Prerequisites: CJ 100, CJ 102. An inquiry into the nature and scope of the U.S. Constitution as it relates to criminal procedures. Areas discussed include the law of search and seizure, arrests, confessions, and identification. 3 credit hours.

CJ 218 Criminal Procedure II and Evidence
Prerequisites: CJ 100, CJ 102. Legal doctrines employed in controlling the successive stages of the criminal process. Rules of law related to wiretapping and lineups, pretrial decision making, juvenile justice, and trial. 3 credit hours.

CJ 220 Legal Issues in Corrections
Prerequisites: junior status and CJ 100, CJ 217. Examination of the legal foundations of correctional practice and review of recent judicial decisions which are altering the correctional environment. An analysis of the factors and forces which are creating a climate of significant reform in corrections. 3 credit hours.

CJ 221 Juvenile Justice System
Prerequisites: CJ 100, P 111. Analysis of stages and decisions made at critical junctures of the juvenile justice process. Topics include an analysis of Supreme Court treatment of juvenile justice issues and the ability of the juvenile justice system to respond to juvenile crime. Focus on the processing of juveniles through the system and the special problems unique to juvenile justice. 3 credit hours. (See also SO 231)

CJ 226 Industrial Security
Prerequisite: CJ 105. Concepts of security as it integrates with industrial management systems presented along with industrial security requirements and standards, alarms and surveillance devices, animate security approaches, costing, planning, and engineering. Principles of safety practices and regulations, fire prevention, property conservation, occupational hazards, and personal safeguards. 3 credit hours.

CJ 227 Fingerprints with Laboratory
Prerequisites: CJ 201, CJ 215. The genetic and mathematical theory relating to fingerprints, chemical and physical methods used in developing latent fingerprints, and major systems of fingerprint classification. Laboratory fee; 3 credit hours.

CJ 250 Scientific Methods in Criminal Justice
Prerequisites: CJ 100; M 109 or M 127. Introduction to the use of scientific methods and logic in the human service professions. Topics studied will include science and the scientific approach to problem solving, the logic of causal inference, problem and hypothesis formulation, the use of experimental designs, laboratory methods, survey research methods, and measurement issues in human services. 3 credit hours.

CJ 251 Quantitative Applications in Criminal Justice
Prerequisite: CJ 250. Introduction to the use of quantitative analysis through study of the basic statistical tools and databases used in human services. Emphasis will be on applied applications of quantitative methods in service delivery systems. 4 credit hours.

CJ 300 History of Criminal Justice
Prerequisite: CJ 100. The development of the major CJ elements including police, prisons, probation, and parole. Significant historical events and philosophical postulates as they pertain to this development. 3 credit hours.

CJ 301 Group Dynamics in Criminal Justice
Prerequisites: CJ 205, P 111. Analysis of theory and applied methods in the area of group process. Focus on both individual roles and group development as they relate to criminal justice issues. Experiential exercises are included. 3 credit hours.

CJ 303-304 Forensic Science Laboratory I and II
Prerequisite: CJ 215. Specific examination of topics and laboratory testing procedures introduced in CJ 215. In the classroom, laboratory procedures are outlined and discussed. Identification and individualization of evidence, casting of hairs and fibers for microscopic identification, electrophoretic separation of blood enzymes. Laboratory fee; 3 credit hours each term.

CJ 306 Security Problems Seminar
Prerequisites: CJ 105, CJ 203. An analysis of special problem areas including college and university campuses, hospitals, hotel/motels, etc. Also, special problems concerning computer protection, bank security, executive personnel protection, credit cards, case law and legal aspects, control of proprietary information, and white collar crime. 3 credit hours.

CJ 310 Criminal Justice Institutions
Prerequisite: CJ 300. Examination of the societal and psychological implications of various types of institutions. Includes both social and total institutions and examines their similarities and dissimilarities with particular emphasis on their implications for criminal justice. 3 credit hours.

CJ 311 Criminology
Prerequisites: CJ 100, P 111, SO 113. An examination of principles and concepts of criminal behavior; criminological theory; the nature, extent, and distribution of crime; legal and societal reaction to crime. 3 credit hours. (See also SO 311)

CJ 312 The Police and Crime Control
Prerequisite: CJ 100. The changing role, perspectives, and operational strategies of policing as they relate to the crime control function of the police. The focus will be on innovative, promising, emerging, or "futuristic" and often highly controversial police practices, programs, and approaches to law enforcement as well as on selective community crime prevention efforts undertaken in conjunction with, under the auspices of, or independently of the police department. Special attention will be devoted to police brutality, the use of deadly force and its consequences, including high-speed police pursuits. 3 credit hours.

CJ 315 Domestic Violence
Introduction to the study of family violence issues. Typology and history of family abuse, responses to family violence, and public policy issues will be the focus of study. Issues in domestic violence, sexual abuse, emotional abuse, elder abuse, child abuse, treatment approaches, and legal guidelines. 3 credit hours.

CJ 333 Police Civil Liability
Prerequisites: CJ 100, CJ 102, CJ 217, or permission of instructor. Introductory overview of types of civil liability lawsuits brought against law enforcement officers. Exploration of ways to relieve the pressures of this potential liability. Emphasis placed on negligence and intentional torts. 3 credit hours.

CJ 350 Leadership and Management in Human Services
Prerequisite: junior or senior standing. An in-depth view of leadership and management skills in a variety of criminal justice and human service settings. Special focus will include problem solving and quality control in agencies. 3 credit hours.

CJ 400 Criminal Justice Problems Seminar
Prerequisites: CJ 100, CJ 300. An examination of theoretical and philosophical issues affecting the administration of justice: the prob-

lems of reconciling legal and theoretical ideals in various sectors of the criminal justice system with the realities of practice. 3 credit hours.

CJ 402 Police in Society
Prerequisites: CJ 100, CJ 300. Acquaints students with the major developments and trends of policing in a free society. Emphasis placed on American police and the role of the police in a democracy. Further emphasis placed on the examination of the interactions between the police and the communities they serve. 3 credit hours.

CJ 403 Advanced Forensic Science I with Laboratory
In-depth examination of blood grouping procedures for red cell antigens, isoenzymes, and serum proteins; identification and typing of body fluids and their stains; collection, processing, and handling of biological materials in casework. Laboratory fee; 4 credit hours.

CJ 404 Advanced Forensic Science II with Laboratory
In-depth examination of several subjects in modern criminalistics, including hair and fiber analysis and comparison, arson accelerants and explosives residues, glass comparisons, and forensic chemistry. Laboratory fee; 4 credit hours.

CJ 408 Child and Family Intervention Strategies
Prerequisites: P 111, P 336, CJ 205, CJ 209, CJ 301. This course is designed to introduce students to the application of investigation and critical thinking strategies to the problems of child abuse, neglect, and domestic violence. Assessment, decision-making, and case management strategies will be explored. 3 credit hours.

CJ 409 Adult Intervention Strategies
Prerequisite: CJ 408. A comprehensive investigation of mental health and correctional systems, including residential and community-based treatment. Particular attention will be placed on strategies for dealing with resistant clients. Students will develop critical thinking skills relating to best practices in a variety of settings. 3 credit hours.

CJ 410 Legal Issues in Private Security
Examines legal problems affecting the private security industry and ways to prevent loss from litigation. Includes intentional torts, negligence, agency, contracts and law of arrest, search and seizure, and interrogation by citizens. 3 credit hours.

CJ 411 Victimology
Introduction to the principles and concepts of victimology, analysis of victimization patterns and trends, and responses to criminal victimization. 3 credit hours.

CJ 412 Substance Abuse and Addictive Behavior
Course provides an overview of drug use and addictive behavior as they relate to law enforcement and correctional treatment issues; current estimate is that 80-90% of violent crime in the United States is correlated with alcohol and drug use. 3 credit hours.

CJ 413 Victim Law and Service Administration
Prerequisite: CJ 411. Introduces the study of crime victims' legal rights and the services available to crime victims within the criminal justice system and in other settings. Topics include victim assistance programs from law enforcement through the courts and corrections systems as well as community-based advocacy and support. This study of victim services is integrated with a focus on the underlying legal structure of crime victim statutory and constitutional rights including notification, participation, protection, and financial remedies (e.g., restitution, compensation, and civil litigation) as well as other rights. Practical program management, evaluation, and funding issues are incorporated. 3 credit hours.

CJ 414 Legal Rights of Crime Victims
Prerequisite: CJ 100. Introduces the study of crime victims' rights within the justice system. Topics include victim-witness programs, victim impact statements, victim notification laws, compensation schemes, and victims' rights legislation. 3 credit hours.

CJ 415 Crime Scene Investigation
Prerequisite: CJ 201, CJ 215. A study of the methods and techniques of scientific crime scene investigation, documentation and recognition of physical evidence, collection, and crime scene reconstruction. Laboratory fee; 3 credit hours.

CJ 416 Seminar in Forensic Science
Prerequisites: CJ 201, CJ 215. An examination and evaluation of current issues in the scientific analysis of physical evidence in criminal investigations. Individual and group activities relating to professional practices of forensic science and the criminal justice system. 3 credit hours.

CJ 420 Advanced Investigative Techniques
Prerequisites: CJ 201, CJ 215, CJ 218, and junior/senior standing. An in-depth study of the principles and techniques associated with the collection and documenting of information obtained during an investigation. Addresses the many sources of information, utilization of informants, the use of hypnosis, polygraph, advanced strategies for interviews and investigations and provides documentation techniques. 3 credit hours.

CJ 425 White Collar Crime Investigation
Prerequisite: CJ 201. This is an advanced course in White Collar Crime Investigation. Students will focus on the history, philosophy, evolution and types of white-collar crimes. This course will examine the various types of white-collar offenses and explore how and why such crimes are committed. The course will also explore the various laws used to combat such offenses and consider the investigative techniques used to identify those engaged in such activity. In addition, the course will explore the profile of the modern white-collar offender and the role of the various federal law enforcement agencies responsible for investigating white-collar crime. 3 credit hours.

CJ 440 Death Investigation—Scene to Court
Prerequisites: senior standing as Criminal Justice or Forensic Science major plus CJ 201, CJ 215, and CJ 415 or permission of instructor. An in-depth study of the principles and techniques associated with investigating homicides; suicides; and accidental, natural, or equivocal deaths. While considering the sociological, psychological, and legal aspects typically found in these cases, the process will take the student from the scene to the court--criminal or civil. 3 credit hours.

CJ 450-454 Special Topics
A study of selected issues of particular interest to the students and instructor. 3 credit hours.

CJ 498 Research Project
Prerequisite: consent of the department chair. The student carries out an original research project in a criminal justice setting and reports the findings. 3 credit hours.

CJ 500A Criminal Justice Pre-Internship
Prerequisite: senior standing in CJ. A course designed to assist students to gain full understanding and appreciation of the internship experience. Students will be ac-quainted with work rules in criminal justice agencies and helped to select the correct internship for their particular interest. A key issue will be extended discussion of criminal justice ethics as related to the various aspects of the criminal justice system. Students are re-quired to complete the CJ 500A course prior to enrolling in the CJ 500B internship experience. 3 credit hours.

CJ 500B Criminal Justice Internship
Prerequisites: CJ 500A and consent of department chairperson. Provides academically monitored field experience with selected federal, state, or local criminal justice agencies with faculty supervision, guidance, and review. The course will include required classroom discussion meetings to facilitate a better understanding of the issues presented during the internship experience. 3 credit hours.

CJ 502 Forensic Science Internship
Prerequisite: junior/senior standing. Provides academically supervised, real-world experience for forensic science majors. The internship usually constitutes the only practical experience in an actual casework lab that students have during the forensic science program, and it provides a valuable asset to the student in the job market. 3 credit hours.

CJ 520 Computer Crime: Legal Issues and Investigation Procedures
Prerequisite: consent of instructor. An overview of computer crime and the procedures forensic computing specialists, law enforcement investigators, and prosecutors must invoke to prosecute computer criminals successfully. 3 credit hours.

CJ 522 Computers, Technology, and Criminal Justice Information Management Systems
Prerequisite: consent of instructor.

An introduction to information systems used within the criminal justice system. Overview of existing criminal justice information systems with implications for future needs. Analysis of the impact of science and technology on criminal justice agencies. 3 credit hours.

CJ 523 Internet Vulnerabilities and Criminal Activity
Prerequisite: consent of instructor. This course provides appropriate strategies for the proper documentation, preparation, and presentation of investigations involving the Internet and familiarizes students with legal information which impacts Internet investigations. 3 credit hours.

CJ 524 Network Security, Data Protection, and Telecommunication
Prerequisite: consent of instructor. A comprehensive introduction to network security issues, concepts, and technologies. The core technologies of access control, cryptography, digital signatures, authentication, network firewalls, and network security services are reviewed along with issues of security policy and risk management. 3 credit hours.

CJ 525 Information Systems Threats, Attacks, and Defenses
This course provides an overview of the actors, motives, and methods used in the commission of computer-related crimes and describes the methods used by organizations to prevent, detect, and respond to these crimes. 3 credit hours.

CJ 526 Firewall and Secure Enterprise Computing
This course covers theory and practices of Internet firewalls and many of the details and vulnerabilities of the IP and embedded protocol sites. In the laboratory and online portion of the course students will construct, deploy, and test a real firewall against common Internet attacks. 3 credit hours.

CJ 527 Internet Investigations and Audit-Based Computer Forensics
Theory and techniques for tracking attackers across the Internet and gaining forensic information from computer systems. The course includes case studies of Internet-based crimes and addresses limits of forensic techniques. 3 credit hours.

CJ 528 Computer Viruses and Malicious Code
This course addresses theoretical and practical issues surrounding computer viruses. 3 credit hours.

CJ 529 Practical Issues in Cryptography
Includes examples of current and historical cryptography and stegonagraphic systems; major types of cryptosystems and cryptanalytic techniques and how they operate, hands-on experience with current cryptographic technology. 3 credit hours.

CJ 530 Investigating Financial Crimes
Study of principles and techniques associated with investigating financial crimes. Emphasis on case study approach to understanding financial crimes investigation. 3 credit hours.

CJ 535 Comparative Criminal Justice
Affords students the opportunity to explore a number of foreign systems with emphasis on policing. Different perspectives of crime problems will be looked at through the prism of foreign culture. 3 credit hours.

CJ 540 Computer Applications in Research and Program Evaluation
Prerequisites: CJ 250, CJ 251; M 109 or M127. An advanced course reviewing major statistical packages and models employed in the analysis of criminal justice and human services data. Students will learn analytic techniques using real data sets. Program evaluation needs will be studied and tested. 3 credit hours.

CJ 541 Problem Solving: Planning, Analysis, and Evaluation
Prerequisite: senior standing. An advanced seminar utilizing the skills developed in preceding research methods and program evaluation courses. The focus will be on integrating and developing an effective yet flexible problem-solving schema for criminal justice and human service agencies. Quantitative and qualitative solutions will be stressed to fit the appropriate problem. Field problems will be solicited. 3 credit hours.

CJ 555 Crime Prevention Through Environmental Design
Prerequisite: CJ 100. Analysis of theory and applied methods of crime prevention using environmental design methods. Experiential exercises are included. 3 credit hours.

CJ 556 Problem-Oriented Policing
Prerequisite: CJ 100. An in-depth examination of problem-oriented policing, including examination of the SARA model, specialized tactics, and methods of community analysis. 3 credit hours.

CJ 557 Crime Mapping and Analysis
Prerequisite: CJ 100. Survey of GIS research and applications in the field of public safety, including analysis of hot spots, density patterns, and forecasts of crime patterns. 3 credit hours.

CJ 558 Leadership Issues in Policing
Prerequisite: CJ 100. Study of leadership within modern police organizations. Experiential exercises are included. 3 credit hours.

CJ 565 Investigating Wrongful Convictions
A research-oriented course that focuses on investigating the circumstances surrounding how and why a particular wrongful conviction may have occurred in the Connecticut courts. Emphasis is on best practices to prevent future wrongful convictions. This course is restricted to senior Investigative Services majors and graduate students in the Forensic Science program. Permission of instructor is required. 3 credit hours.

CJ 599 Independent Study
Prerequisite: consent of department chair. An opportunity for the student, under the direction of a faculty member, to explore and acquire competence in a special area of interest. 1-3 credit hours.

CHEMICAL ENGINEERING

CM 220 Process Analysis
Prerequisites: CH 116 or EAS 120; EAS 211, EAS 213, M 118. An introduction to the profession of chemical engineering and the application of material and energy balances to the solution of chemical engineering problems. Analysis and design of processes using physical property estimation methods, mass balances, and energy balances. Typical processes include sequences of mixing, separation, and reaction steps. 3 credit hours.

CM 310 Transport Operations I with Laboratory
Prerequisites: EAS 224, M 204. Application of transport phenomena principles to systems involving momentum, heat, and mass transfer with emphasis on equipment design. Use of microscopic and macroscopic balances, continuity and Navier-Stokes principles, and turbulent flow theories to develop mathematical models of physical systems with applications in fluid mechanics and thermal energy transport. Topics include design of piping systems, flow instruments, filters, heat exchangers, evaporators, and others of current interest. Laboratory work includes experiments in fluid flow and heat transfer, computer simulation, oral and written reports. 4 credit hours.

CM 311 Chemical Engineering Thermodynamics
Prerequisite: CM 220 or consent of instructor, EAS 224. Applications of the first and second laws of thermodynamics to batch and flow processes important in chemical engineering for homogeneous and heterogeneous systems, mixtures, and pure materials. Topics include phase and chemical equilibria, chemical reactions, thermochemistry, thermodynamic properties, and miscibility. 3 credit hours.

CM 321 Reaction Kinetics and Reactor Design
Prerequisite: CM 220. Corequisite: M 204. Homogeneous and heterogeneous catalyzed and noncatalyzed reaction kinetics for flow and batch chemical reactors. Application of kinetic data to both isothermal and nonisothermal reactor design. This course is intended for both chemists and chemical engineers. 3 credit hours.

CM 401 Mass Transfer Operations
Prerequisites: M 204, EAS 224. Advanced topics in diffusion and mass transfer in solids, liquids, and gases. Topics include Fick's law, mass transfer coefficients, mass transfer correlation, interphase transfer, unsteady state mass transfer, adsorption, membrane separations, humidification and drying. Application to the analysis and design of mass transfer controlled process equipment. 3 credit hours.

CM 410 Transport Operations II with Laboratory
Prerequisite: CM 310. Application of transport phenomena principles to systems involving momentum, heat, and mass transfer with emphasis on equipment design. Topics include design of staged separation equipment for distillation, extraction and leaching, absorption, and others of current interest. Lab-

oratory work includes experiments in mass transfer, reactor systems, computer simulation, oral and written reports. 4 credit hours.

CM 420 Process Design Principles
Prerequisites: CM 310, EAS 232. Corequisites: CM 321, CM 410. Study and application of principles needed in the design of process systems. Topics include cost estimation, hazard and safety analysis, ethical concerns, preliminary design techniques, optimization, computer-aided design (using ASPEN PLUS), alternative designs, and technical reports. Methods include team and individual assignments, oral and written presentations. 3 credit hours.

CM 421 Plant and Process Design
Prerequisites: CM 321, CM 410, CM 420, and senior status. A capstone course in the design of processing plants and equipment, applying principles from transport operations, thermodynamics, kinetics, and economics. Students work individually and in groups to develop flowsheets, select equipment, specify operating conditions, and analyze designs from technical, economic, and safety perspectives. Extensive report writing and oral presentations. 3 credit hours.

CM 431 Process Dynamics and Control with Laboratory
Prerequisites: M 204, CM 310, CM 321. Fundamental principles of chemical process dynamics used in the measurement and control of process variables such as temperature, pressure, and flow rate. Development of linear and nonlinear dynamic process models, stability analysis, and control system design using analytical and computer methods. Laboratory assignments stress the analysis, design, and tuning of process loops using computer simulations and industrial control equipment on pilot-scale process equipment. Students gain experience using industrial control hardware such as programmable logic controllers and distributed control systems. 4 credit hours.

CM 450-455 Special Topics in Chemical Engineering
Prerequisite: consent of instructor. Intensive study of some aspects of chemical engineering not covered in the more general courses. 1-4 credit hours.

CM 501/502 Senior Project I and II
Prerequisites: senior status and consent of course instructor (faculty advisor) and program director. Student should propose an original, significant problem or theory. The investigation should include at least two of the following elements: theoretical analysis, mathematical or computer modeling, optimal design methods, laboratory experimentation. Weekly conferences with advisor, final written and oral report with format to be determined by faculty advisor. 3 credit hours per term.

CM 521 Air Pollution Fundamentals
Prerequisite: permission of instructor. An introduction to the sources of air pollution, the transport of gaseous and particulate pollutants in the atmosphere on local and global scales, transformations of pollutants by atmospheric processes, the impact of pollutants on the environment, the control of sources of air pollution, and legislative mandates. Introduction to meteorological concepts and computer transport models. Current issues such as ozone depletion and global warming will also be discussed. 3 credit hours.

CM 599 Independent Study
Prerequisites: consent of faculty supervisor and program director. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest.

Weekly conferences with supervisor, final written (and possibly oral) report, format to be determined by faculty supervisor. 1-4 credit hours.

CHINESE

CN 101 Conversational Chinese I
Oral Chinese for beginners. Emphasis on using Chinese for communication in daily life. Teaches basic conversational sentences and vocabulary quickly through word substitution and extension practice. Taught in phonetic English spelling (Chinese spelling system known as Han Yu Pin Yin) with exposure to the simplified Chinese characters. Incidental references to Chinese history, culture, and business. Open only to students with no previous knowledge of Chinese. 3 credit hours.

CN 102 Conversational Chinese II
Prerequisite: CN 101 or permission of instructor. Builds on the Chinese language skills developed in CN 101 and develops speaking abilities

through class practice and grammatical drills. Additional Chinese characters studied step by step. 3 credit hours.

CN 201 Chinese Language and Culture
Prerequisite: CN 102 or permission of instructor. Advanced study of Chinese language, both conversational and written. Culture training through exposure to Chinese arts, history, economics, and society. 3 credit hours.

CN 204 Chinese Language and Literature
Prerequisite: CN 201 or permission of instructor. Advanced study of Chinese language. Extensive reading of Chinese classical and modern fiction, drama, and poetry. 3 credit hours.

COMMUNICATION

CO 100 Human Communication
Competencies and skills needed to communicate effectively in varied personal, relational, and professional contexts. Communication process, verbal/nonverbal communication, listening, persuasion, conflict management, and group decision-making are studied in interpersonal, public, mass, and organizational settings. Students are assisted in developing skills appropriate to real-life situations. Recommended for all students regardless of major. 3 credit hours.

CO 101 Fundamentals of Mass Communication
Corequisite: CO 100. Introduction to the mass media of newspapers, film, magazines, radio, television, trade publications, and public relations. Course emphasizes media's impact on society. 3 credit hours.

CO 102 Writing for the Media
A study of drills and exercises in writing television and radio news, news releases, speeches, public service announcements, and film documentaries. Emphasis is placed on firsthand practical experience assignments and criticism of completed copy. 3 credit hours.

CO 103 Audio in Media
Concerned with sound as used in radio, television, and film. Course entails lectures, demonstration, and lab practice of sound production and transmission. Laboratory fee; 3 credit hours.

CO 109 Communication for Management and Business
Prerequisite: CO 100. Introduction to the concepts and skills needed to communicate effectively in business and professional settings. Students develop communication competency by focusing on communication activities common to business and service organizations. Interpersonal communication, group and meeting communication, listening skills, interviewing, speeches, public and instructional presentations, and negotiation are stressed. 3 credit hours.

CO 114 Production Fundamentals
Introduction to theory and technique in sound and video media. Several team projects will provide a fundamental production orientation in each medium as well as provide the environment to discuss goals and objectives of production. Laboratory fee; 3 credit hours.

CO 200 Theories of Group Communication
Prerequisite: CO 100. Focus is on the dynamics of communication and group processes including leadership styles, team building, task and maintenance functions, problem-solving and decision-making, and conflict management. Students develop communication skills through class activities designed to maximize effective decision-making and evaluation. 3 credit hours.

CO 203 Radio Production
Prerequisite: CO 103 or permission of instructor. Theory and practice of techniques involved in the function and operation of a radio station. Microphone techniques, engineering operations, transmitter readings, logging, and programming will be included. Laboratory fee; 3 credit hours.

CO 205 Intercultural Communication
Prerequisite: CO 100. A theoretical and practical survey of intercultural communication processes. This course is concerned with the interpersonal dimensions of intercultural communication and will examine the distinctive cultural orientations, behaviors, expectations, and values that affect communication situations. 3 credit hours.

CO 208 Introduction to Broadcasting
Prerequisite: CO 101. General survey and background of broadcasting, cable, pay and premium TV services,

and new technologies. Current changes, law, regulation, financing, and public input are examined. Emphasis is placed on current status and future potential of these industries. 3 credit hours.

CO 212 Television Production I
Prerequisite: CO 114 or permission of instructor. Introduction to the mechanics, techniques, and aesthetic elements of television production. Course provides basic grounding in the art and craft of the medium. Laboratory fee; 3 credit hours.

CO 214 Elements of Film
Prerequisite: CO 114 or permission of instructor. Stresses the understanding of film as a creative form of communication. Student is introduced to basic techniques of motion picture production through lectures, audiovisual activity, and small-group involvement. Laboratory fee; 3 credit hours.

CO 220 Film Production I
Prerequisite: CO 214. Involves the transformation of an original idea into film: initial analysis, proposed treatment plan, sequencing, film scripting, preproduction planning, nature of the production process. A short film is produced through team effort. Laboratory fee; 3 credit hours.

CO 300 Persuasive Communication
Prerequisite: CO 100. Study of communication as social influence. Analysis of theories of attitude change. The use and effects of compliance-gaining strategies in interpersonal, public, and mass communication contexts. Students develop, present, and analyze persuasive messages. 3 credit hours.

CO 301 Communication Theory and Research
Prerequisite: junior status. Acquaints students with the nature of communication inquiry. Theories of communication effects are surveyed. Research methodologies relevant to advertising, journalism, broadcast media, public relations, and organizational communication settings are examined. 3 credit hours.

CO 302 Social Impact of Media
Prerequisite: CO 101. Examines such problems as regulatory control of the media, law and ethics, and the behavioral aspects of mass and interpersonal communication. Students examine the variety of media writing and commence writing their own media messages. 3 credit hours.

CO 306 Public Relations Systems and Practices
This course makes students aware of the depth and sensitivity of the role public relations plays in today's business environment. Orients students to career paths utilizing communication, journalistic, and management skills as well as skills acquired in business and English courses. Use of the lecture/discussion, case study, and guest speaker approach to teach all students the historical, theoretical, practical, and technical applications of public relations. 3 credit hours.

CO 308 Broadcast Journalism
Prerequisite: CO 102 or permission of the instructor. Entails practice in news gathering, editing, writing, and use of news services and sources. Creating documentary and special event programs through film for television news, on-the-spot film and videotape reporting are included. 3 credit hours.

CO 309 Public Relations Writing
Prerequisite: CO 102. Examines the elements of good writing as applied to the public relations field. Students research and identify general and specialized audience needs and create messages to satisfy those needs. They plan and execute projects within selected media such as newspapers, magazines, TV, radio, and film, as well as speeches for public appearances. 3 credit hours.

CO 310 Pictorial Journalism
The study of photography and media design as active observation and interpretation of events in the print media. 3 credit hours.

CO 312 Television Production II
Prerequisite: CO 212. An intermediate course designed to provide the student with the opportunity to coordinate the many areas of TV production. Videotape and live production techniques are employed. Laboratory fee; 3 credit hours.

CO 317 Advanced Writing for the Media
Prerequisite: CO 102. Planning and writing longer forms of scripts, emphasizing documentary and dramatic writing for production. 3 credit hours.

CO 320 Film Production II
Prerequisite: CO 220. The creative process involved in translating the screenplay into a narrative film is explored. Narrative form, structure,

and production technique are examined through examples of short and feature-length films. Students produce short narrative films by team effort. Laboratory fee; 3 credit hours.

CO 335 Advertising Media
This course covers the characteristics of major media and the impact of advertising on the demand for products and services. It will provide students with a critical study of communication principles and concepts as applied to advertising copy. Emphasis will be on how consumers use media; media planning and evaluation; copywriting styles; coordination of visual and verbal concepts; and the principle problems of building, implementing, and evaluating advertising programs. 3 credit hours.

CO 340 The History of Film
A survey of the historical development of the film medium consisting of lectures, discussions, and the screening of films which demonstrate the interrelationships between historical development and the establishment of the film medium as a powerful communicative art form. Laboratory fee; 3 credit hours.

CO 399 Media Campaigns
Examines the role played by the mass media in political campaigning. Students look at historical perspectives and study current trends. FCC laws regarding advertising, lowest unit cost, section 315, and other regulations will be examined. Students view videotapes of past political media campaign examples and have the opportunity to participate in and produce hypothetical political media campaigns. 3 credit hours.

CO 400 Communication in Organizations
Communication examined in formal organizational contexts such as school, industry, hospitals, and government. Students will be prepared to function more effectively in organizations' dynamic communication systems and to solve problems related to the interaction of organizations with the environment via the interactions of people and messages. 3 credit hours.

CO 410 Management Communication Seminar
Open to all upper-division students, regardless of major. Involves structure and function of communication in organizations. Practice in understanding and managing interpersonal differences. Emphasizes concepts and principles needed for effective management of organizational communication processes. 3 credit hours.

CO 412 Advanced Television Production
Prerequisite: CO 312. Essentials of budgeting, marketing, and regulatory policies and rules. Produc-tion teams are formed to produce sophisticated local television programs under close supervision. 3 credit hours.

CO 415 Broadcast Management
Involves the administrative and personnel problems of television and radio studio management, broadcast engineering, local sales, continuity, and programming. Discussions will include scheduling and the development of facilities. 3 credit hours.

CO 420 Communication and the Law
Prerequisite: junior status. This course will trace the freedom and control of the print, broadcast, cable. and telecommunications industries and the effect on the public. 3 credit hours.

CO 435 Advertising Seminar
Prerequisites: CO 335 and senior standing. Strategic approaches to managing an advertising campaign related to a specific area, topic, or product are developed. Emphasis on market research, determining consumer target markets, media selection, creation of copy, development and control of budgets, and evaluation and presentation of advertising. 3 credit hours.

CO 450-454 Special Topics
Topics in communication which are of special or current interest. 3 credit hours.

CO 500 Seminar in Communication Studies
Prerequisite: Senior communication major. This capstone course will integrate current and developing trends with the individual student's interest and perspectives. Students will present for discussion and examination issues of interest within a unifying theme. 3 credit hours.

CO 597 Practicum
Prerequisite: CO 301. A course of study designed especially for the supervised practical application of previously studied theory in a group setting. Done under the supervision of a faculty sponsor and coordinated with a business organization. 3 credit hours.

CO 598 Internship
Prerequisite: Permission of the instructor. On-the-job learning in selected organizations in production, public relations, journalism, or advertising. 3 credit hours.

CO 599 Independent Study in Communication
Prerequisites: consent of faculty member and department chair. Opportunity for the student under the direction of a faculty member to explore an area of interest. 1-3 credit hours per semester with a maximum of 6 credit hours.

COMPUTER SCIENCE

CS 107 Computers and their Applications
Concepts underlying modern application of computer systems. Windows, word processing, spread sheets, databases. *Not to be taken for credit by computer science majors.* 3 credit hours.

CS 110 Introduction to C Programming
Prerequisite or corequisite: M 115. A first course in computer programming using the C language; for engineering, computer science, mathematics, and science students. Problem-solving methods, algorithm development, and good programming style. Expressions, functions, libraries, basic types and arrays. Programming assignments will stress numeric applications. Lecture plus lab, including work with LEGO Mindstorm™ robots. (4 contact hours); 3 credit hours.

CS 166 Discrete Mathematics for Computing
Prerequisite: CS 110. A foundation course for computer science majors. Introduction to fundamentals, including logic, sequences, sets, functions, recursion, induction, proof methods, counting techniques, and Big-O notation. 3 credit hours.

CS 210 Java Programming
Prerequisite: CS 110. Introduction to the Java programming language. Strings, arrays, and vectors. Object-oriented programming concepts including encapsulation, inheritance, and polymorphism. Applets and event-driven programming. 3 credit hours.

CS 212 Intermediate C Programming
Prerequisites: CS110, CS 210, or permission of academic advisor and instructor. Further topics in the C programming language. Problem-solving methods, algorithm development, and good programming style. Pointers, strings, structured data, two-dimensional arrays, files, recursion, dynamic memory allocation, parameter passing mechanisms, and the use of pointers to process arrays and lists. Basic algorithms for searching, sorting, and simple numerical analysis. Programming assignments will include both numeric and non-numeric applications. 3 credit hours.

CS 214 Computer Organization
Prerequisite: CS 166 or consent of instructor. Fundamentals of computer technology, binary number systems, data type standards and data type storage requirements, Turing machines, binary logic, and simple "gate" circuits. The five functional units of input, output, ALU, control unit, and memory are covered and integrated into a "virtual," "generic" computing machine. Progression from Boolean fundamentals through binary logic to micro-code creation. Hands-on experience assembling and implementing low-level programming of a typical computing system. 3 credit hours.

CS 215 Introduction to Databases
Prerequisite: CS 110. Emphasis on comprehending database concepts and developing a practical level of skill in a current database software package. An introduction to data modeling and normal forms, introduction to Standard Query Language (SQL), Query By Example (QBE), security, and report generation. Students develop and implement a modest database project. 3 credit hours.

CS 226 Data Structures Using Collections
Prerequisite: CS 210. Intermediate program design and debugging in Java. The nature and application of data structures such as arrays, stacks, queues, priority queues, and trees. Evaluation of the performance of different data structures for typical applications. Students will write and debug several projects using Java's built-in class library; classes covered include sets, maps, hash tables, trees, array-based lists, linked lists, stacks, and vectors. 3 credit hours.

CS 247 Network Essentials and Technologies
Prerequisite: sophomore standing. Corequisite: CS 214. A foundation in current network technologies for

local area networks (LANs), wide area networks (WANs), and the Internet. Introduction to the hardware, software, terminology, components, design, and connections of a network. The OSI model will be covered as well as differing topologies and protocols for LANs. The course will include both lectures and hands-on labs. 3 credit hours.

CS 320 Operating Systems
Prerequisite: CS 214 or EE 371 and EE 472 as a corequisite. Modern operating system concepts including interrupts, process and thread management, concurrency, deadlock, memory management, file system management, resource allocation. 3 credit hours.

CS 326 Data Structures and Algorithms
Prerequisites: CS 166, CS 212, CS 226. Data structures–trees, graphs, hash tables. Recursive techniques – divide and conquer, backtracking, recursion elimination. Algorithms – sorting, searching, shortest paths. Analysis of the complexity of algorithms. Programming will be required. 3 credit hours.

CS 350 Human-Computer Interaction
Prerequisite: CS 210 or programming experience in C, VB, VB.Net, or Java. The effect of psychological and physiological factors on the design of the Human-Computer Interface (HCI). The influence of various input and output devices. Evaluation of the interface for qualities such as learnability, usability, human efficiency, and accuracy. Students will design, implement, analyze, and evaluate Graphical User Interfaces (GUIs). 3 credit hours.

CS 416 Social and Professional Issues in Computing
Prerequisite: junior or senior standing. A broad-ranging look at the capabilities and limitations of computers and the effects of rapid change. Roles and responsibilities of the computer professional in our world, codes of ethics. Complex systems, risks, and system failure. Intellectual property. Social effects of networks and global communication, outsourcing, privacy, databases, data mining, cryptography, and snooping. Computer crime, break-ins, terrorism, and countermeasures. 3 credit hours.

CS 425 Principles of Computer Graphics
Prerequisites: M 118, CS 212, CS 226. Development and implementation of the fundamental algorithms of computer graphics: 2-D viewing, geometric transformations, clipping, curves, user interaction. Introduction to 3-D viewing and surfaces. Programming projects required. 3 credit hours.

CS 428 Object-Oriented Design
Prerequisites: CS 210, CS 226. An object-oriented design methodology course. Topics include requirements capture, object-oriented system analysis, design, and implementation. Primary emphasis on the UML methodology, separation of layers, design patterns, and the importance of these in developing a software project. Students will design a major group project and implement portions using C++ or Java. 3 credit hours.

CS 434 Assembly Language
Prerequisites: CS 210, CS 214 or EE 371. Introduction to assembly language programming, including the hardware instruction set, assembly language syntax and features, macros, subprograms, interrupts, I/O conversions. Programming required. 3 credit hours.

CS 440 Programming Laboratory
Prerequisites: junior or senior standing in computer science, consent of faculty supervisor, and approval of program coordinator. The student will write a large program or a series of programs. Projects will be an extension of the course materials of one of the junior/senior courses. Course may be taken repeatedly, up to three times, working in different languages or doing more advanced projects. 1 credit hour.

CS 441 Web-Database Application Development
Prerequisites: CS 215, CS 226, and CS 320 or programming experience in C, VB, VB.Net, or Java. "Dynamic" web page generation through interaction of "client-side" user input and "server-side" back-end databases. Various technologies and applications that enable the two-way interchange of data between users and databases across the web. 3 credit hours.

CS 445 Network Administration
Prerequisite: CS 320. Fundamentals of administration of a networked computer. Topics include basic duties of a system administrator; overview of TCP/IP networking; file system layouts; user management; network services such as DNS, NIS, DHCP, file sharing, printing, mail, ftp, web, interfacing different operating systems on one network; and general security issues including prevention through firewalls and secure

shells. Lab exercises will use both UNIX and Windows systems. 3 credit hours.

CS 446 Introduction to Computer Security
Prerequisite: CS 320 or permission of the instructor. Knowledge of networks desirable. A survey of computer and network security issues including types of network attacks, viruses, intrusion detection and tracking, firewalls, trust relationships and authentication, secure connections, cryptography, and recent security policy and legislation. 3 credit hours.

CS 447 Computer Communications
Prerequisites: CS 214 or EE 472 and any one of the following: EAS 345, IE 346, M 371, or EE 320. Problems and solutions in network design. Layered models, network topology, protocols, virtual circuits and packet switching, local networks (CSMA, token ring, ethernet), security (DES, public key crypto-systems), Internet protocols, client/server programming, sockets. 3 credit hours.

CS 450-469 Special Topics
Prerequisite: junior or senior standing in computer science. New developments or current practices in computer science. 3 credit hours.

CS 472 Script Programming for Network Administration
Prerequisite: CS 320. Concepts and details of writing small programs, called scripts, for the Unix and Windows-server operating systems. Security issues in shell scripts, batch file programming, Perl scripts, and Python scripts. Students will write scripts to administer both computers and networks. 3 credit hours.

CS 478 Artificial Intelligence
Prerequisite: CS 226. The concepts, syntax, and procedures of a functional language. Methods and present capabilities of artificial intelligence. Topics: general search strategies, heuristics, game trees, knowledge representation, propositional and first-order logic, inference, probabilistic reasoning, planning, and expert systems. 3 credit hours.

CS 504 Senior Project
Prerequisites: senior standing in computer science, consent of faculty supervisor, and approval of program coordinator. A project is selected and carried out in conjunction with the faculty advisor. Work is presented at a seminar at the end of the term. 3 credit hours.

CS 524 Advanced Databases
Prerequisites: CS 215, CS 226, and CS 320. A second course in database systems covering advanced topics and new developments in the database field. Topics from: database design methodologies and evaluation, embedded SQL, concurrency control, recovery schemes, security, query processing and optimization, and an introduction to object-oriented databases. 3 credit hours.

CS 526 Object-Oriented Principles and Practice/C++
Prerequisites: CS 212, CS 226. The C++ language; object-oriented design and programming. Protection of privacy, encapsulation of data with relevant functions. Advanced aspects of C++; inheritance, templates, polymorphism, virtual functions, and exception handling. Several programming projects in C++. 3 credit hours.

CS 534 Cryptography and Data Security
Prerequisite: CS 166, CS 210, CS 320. A survey of cryptographic concepts and algorithms and their application to data security. Techniques studied will include private key cryptosystems, public key cryptosystems, and hash functions. Commonly used algorithms will also be studied. These might include DES, 3DES, AES, IDEA, RSA, Diffie-Hellman, MD5, SHA, and DSS. We will also examine how these algorithms are used to provide confidentiality, message authentication, key exchange, and digital signatures in applications such as client-server authentication, email security, and web security. 3 credit hours.

CS 536 Structure of Programming Languages
Prerequisites: CS 212, CS 226. Computer language components: their specification, semantics, implementation, and internal operation. The structure, syntax, and semantic aspects of several languages are examined. Short programs are required in two new languages. 3 credit hours.

CS 547 Systems Programming
Prerequisites: CS 212, CS 320 or EE 371. Techniques for UNIX systems programming in the C language. Topics include macro preprocessors, conditional compilation, low-level interface programming, UNIX system calls including file operations and directory operations, process

control, interprocess communication, and client-server routines. Programming projects required. 3 credit hours.

CS 563 Mobile Robotics
Prerequisites: CS 226, CS 320. Principles of construction and navigation of mobile robots. Topics include locomotion mechanisms, sensor types and usage, reactive behavior, tracking, obstacle avoidance, path planning, and communication schemes for remote control. Students will work both individually and in groups to construct and program small mobile robots using Lego Mindstorms kits. 3 credit hours.

CS 590 Internship
Prerequisites: junior standing, approval of advisor. Student will undertake a supervised work experience of at least 100 hours, preferably in the local computer science industry. 0 credit hours.

CS 599 Independent Study
Prerequisites: junior or senior standing in computer science, consent of faculty supervisor, and approval of program coordinator. (Refer to academic regulations for independent study.) Exploration of an area of interest. Written and oral presentations are normally required. 3 credit hours.

DENTAL HYGIENE

DH 105 Introduction to Dental Hygiene I
Prerequisite: DH 105. This course provides entry-level students with an introduction to allied health education and the profession of dental hygiene. Topics include the role of the dental hygienist in the health care delivery system; the history of dental hygiene; the role of professional associations; basic scientific terminology of the head, neck, and oral cavity; introduction to the caries process and gingival disease process; and oral hygiene protocols. 1 credit hour.

DH 110 Introduction to Dental Hygiene II
Prerequisite: DH 105 or permission from the instructor. This course is a continuation of DH 105 and provides students with a survey of contemporary issues encountered by dental health care professionals. Emphasis is placed on professional standards, health promotion, disease prevention, review of dental specialties, and ethical issues that are encountered by dental hygienists. 1 credit hour.

DH 214 Oral Facial Structures
Prerequisites: sophomore status, BI 121. This course examines the head and neck region, emphasizing the anatomy of oral facial structures, including the teeth. This course also addresses oral histology and embryology. 4 credit hours.

DH 215 Radiology
Prerequisites: sophomore status, DH 214, DH 220. This course is an extension of the clinical course sequence and concentrates on the role of radiographs in the diagnosis and treatment of oral diseases. The course emphasizes radiographic characteristics and production, equipment, safety, processing, and interpretation. 3 credit hours.

DH 220 Dental Hygiene Concepts I
Prerequisite: sophomore status. DH 220 is the first in a series of clinical courses; it provides the foundations of clinical dental hygiene practice. The course focuses on professionalism, ethical decision-making principles, infection control, the impact of tooth accumulated deposits, and the development of the knowledge and skills necessary for the delivery of dental hygiene services. Clinical laboratory fee; 3 credit hours.

DH 240 Dental Hygiene Concepts II
Prerequisites: sophomore status, DH 214, DH 220. This course is an extension of DH 220 and focuses on the continuing development of the didactic, affective, and psychomotor skills necessary for comprehensive dental hygiene treatment. Lecture topics include medical history, oral inspection, data collection procedures, caries process, fluoride, oral physiotherapy and chemotherapeutics for the management of caries and periodontal disease, and treatment planning. Classroom presentations concentrate on the dental hygiene process of care. Clinical laboratory fee; 4 credit hours.

DH 320 Pharmacology and Pain Management
Prerequisites: junior status and required first- and second-year dental hygiene courses. This course provides an overview of medications encountered by health care workers. Particular attention is paid to the impact various medications have on dental and dental hygiene treatment. Medications, local anesthetics, and other chemotherapeutic agents uti-

lized in the dental treatment setting will be emphasized. 3 credit hours.

DH 325 General and Oral Pathology
Prerequisites: junior status and required first-and second-year dental hygiene courses. A survey of general pathology with emphasis on the impact of pathologic conditions on the oral cavity. Diseases of the gingiva and periodontium and the role of the dental hygienist in recognition and referral will be emphasized. 3 credit hours.

DH 327 Periodontology
Prerequisites: sophomore status, DH 214, DH 220. This course provides an in-depth examination of periodontal diseases, the immune response, and both surgical and nonsurgical interventions. The role of the dental hygienist as a periodontal co-therapist is emphasized. 3 credit hours.

DH 330 Dental Hygiene Concepts III
Prerequisites: junior status and required first-and second-year dental hygiene courses. DH 330 is a continuation of the clinical course sequence. Content emphasis is placed on instrument alternatives, professional mechanical oral hygiene care, instrumentation theory for prevention and control of periodontal diseases, and the utilization of patient cases to assess periodontal status. Clinically, students will be treating patients with a broader scope of oral/physical conditions while incorporating patient radiographs into the dental hygiene treatment plan. Clinical laboratory fee; 3 or 5 credit hours.

DH 342 Dental Materials
Prerequisites: junior status, required second-year dental hygiene courses. This lecture/laboratory course provides students with an understanding of the biomaterials and techniques utilized in preventive, restorative, and surgical dental procedures. Emphasis is placed on the role of the dental hygienist in maintaining and evaluating preventive and restorative materials. 3 credit hours.

DH 350 Dental Hygiene Concepts IV
Prerequisites: junior status, required second-year dental hygiene courses. DH 350 is the fourth course in the clinical course sequence. The didactic portion of the course concentrates on ethical decision-making skills, problem- solving abilities, treating the medically compromised patient, and practice management principles. Clinically, students will have an opportunity to treat more challenging cases. Clinical laboratory fee; 5 credit hours.

DH 423 Instructional Planning and Media
Prerequisites: junior status and required first- and second-year dental hygiene courses. This course provides dental hygiene students and practitioners with an overview of the instructional planning process. Emphasis will be placed on the steps in the process, the development and utilization of media, and oral presentation skills. 3 credit hours.

DH 438 Dental Hygiene Research
Prerequisites: junior or senior status, required second-year dental hygiene courses. This course provides dental hygiene students with the skills needed to understand, interpret, and critique professional literature. Emphasis is placed on the design of a sound research protocol. 3 credit hours.

DH 455 Dental Hygiene Public Health
Prerequisites: junior status, required second-year dental hygiene courses, DH 320, DH 350, DH 325, DH 342. This course emphasizes the role of dental and dental hygiene public health programs in the health care delivery system. The role of the dental hygienist in community disease prevention and health promotion activities will be stressed. Students will have the opportunity to interact with a broad spectrum of community groups during the field experience aspect of the course. 4 credit hours.

DH 460 Advanced Dental Hygiene Concepts
Prerequisites: junior status, required second-year dental hygiene courses, DH 320, DH 325, DH 342, DH 350. The clinical course sequence culminates in DH 460; this course provides the opportunity for students to integrate skills and didactic knowledge previously gained. Clinical time will focus on increasing time efficiency while maintaining recognized standards of care. Didactic content will focus on professional credentials, state licensing agencies, continuing education, the role of professional organizations, employment goals, and resume preparation. Clinical laboratory fee; 5 credit hours.

DH 461 Oral Medicine
Prerequisites: junior or senior status, required second-year dental hygiene

courses, DH 320, DH 325, DH 350. Oral Medicine utilizes the content from Anatomy and Physiology, Pharmacology, Oral Pathology, Dental Hygiene Concepts, and other courses as the basis for discussing the impact of systemic conditions on the oral cavity. The medical history will be utilized in a case-study approach to address the role of the dental hygienist in medical risk assessment and management. 3 credit hours.

DH 462 Dental Hygiene Internship
Prerequisites: junior or senior status, required second-year dental hygiene courses, DH 423, DH 438. This course provides senior-level dental hygiene students with the opportunity to apply the knowledge and skills gained throughout the dental hygiene curriculum in an internship experience compatible with future career goals. 3 credit hours.

DH 468 Dental Hygiene Senior Project
Prerequisites: junior or senior status, required first- and second-year dental hygiene courses, DH 423, DH 438. This course provides the student with the opportunity to design, implement, and present a project that enriches their existing knowledge and contributes to the profession of dental hygiene. All previous and current coursework will assist the student in the effort. 3 credit hours.

DH 490-499 Special Topics
Prerequisite: dental hygiene major; specifics of course(s) to be determined in consultation with the program director. Oppor-tunity for the student, under the direction of the dental hygiene faculty, to explore an area of interest. 1-3 credit hours; maximum of 6 credits.

NUTRITION AND DIETETICS

DI 150 Sports Nutrition
Review of the principles of nutrition and exercise with emphasis on counseling the athlete; facts and fallacies of sports nutrition; energy and fluid balance; evaluating sports nutrition information in the lay literature; appropriate diets for training; and managing the young person, older adult, and athlete with special needs. Planning meals for training and competition, as well as dietary evaluation using computerized nutrient analysis, will be included. 3 credit hours.

DI 200 Food Science and Preparation with Laboratory
Provides knowledge of food science, cooking, and baking principles; physiology of taste; components of food including color and flavor pigments (phytochemicals); application of scientific reactions during preparation and cooking; accurate weighing and measuring skills; proper tasting and product evaluation techniques; safe handling of knives, kitchen equipment, and food products. Instruction will include sanitary food experimentation and preparation in food laboratory in addition to classroom lectures. Laboratory fee; 4 credit hours.

DI 214 Menu Planning
Principles of meal planning and writing menus for volume food combinations, texture, color, nutrition, and cost. The interrelated steps involved in quantity food production, the delivery of food, and the responsibilities of management. 3 credit hours.

DI 215 Principles of Nutrition
Prerequisite: BI 121. An introduction to nutrition science including nutrient interactions, digestion, absorption, sources of nutrients, and importance of phytochemicals. Energy metabolism, weight control, contemporary nutrition issues, and individual nutrition analysis are included. 3 credit hours.

DI 216 Food Safety, Sanitation, and Purchasing
Students learn principles of food sanitation, safety, and purchasing. Students will also prepare policies and procedures and conduct an in-service training class for a food service facility. Prevention of food poisoning, legal responsibilities of management, food handling, and delivery systems are discussed for safe and sanitary practices. Procurement specifications for food and equipment, facility layout, receiving principles, issuing of food items, cost control, and budget preparation are also included. 3 credit hours.

DI 222 Issues and Careers in Health Wellness
An overview of health care issues linked to lifestyle, living conditions, physical environment, socioeconomic status, eating behavior, dental health, and rising costs of healthcare. Critical analysis of community health and design, work environment, and eating behavior, as well as hygiene habits related to wellness. Survey and preparation for health careers. 3 credit hours.

DI 315 Nutrition and Disease
Prerequisite: DI 215. Aspects of diet in treating and preventing various symptoms and syndromes, diseases, inherited errors of metabolism, and physiological stress conditions. 3 credit hours.

DI 326 Principles of Dietetics Management
Provides knowledge required to effectively manage the provision of dietetic services in a food service operation, clinical nutrition department, community or ambulatory nutrition program, private practice office, or other food/nutrition facility. Management principles will be discussed using human resource applications, leadership theories, decision-making tools, and organizational skills for the successful dietetics manager. Managing materials, productivity, financial data, and information in a dietetics environment will be discussed using quality improvement principles. 3 credit hours.

DI 330 Dietetic Practice in Today's Society
Prerequisite: DI 315. Knowledge of dietetic practice: medical terminology, interpretation of laboratory values, format of the medical record, documenting nutrition care, nutrition screening and assessment, medical nutrition therapy (MNT), patient interviewing and counseling. Nutrition care protocols for enteral and parenteral feeding, pediatric care, diabetes, cardiovascular disease, hypertension, pulmonary insufficiency, dysphagia, cancer, renal disease, obesity, and other diseases with nutritional implications. 3 credit hours.

DI 342 Healthy Food Preparation
Preparing food according to today's healthy eating goals. Food laboratory strategies include modifying recipe content to include natural sources of protein, fat, and carbohydrate in healthy meals, snacks, sports beverages, etc., while incorporating accurate nutrition analysis and costing of recipes using the latest technology. Discussion of organic, functional, and genetically engineered foods. Students design recipe or food demo projects incorporating course content. Provides knowledge and expertise in creating and redesigning recipes. Incorporates today's healthy eating principles. Emphasis is placed on eating healthy without its costing more. Laboratory fee; 3 credit hours.

DI 350 Nutrition Throughout the Life Cycle
Prerequisite: DI 215. This course covers various nutrients required by humans and the roles of the individual nutrients in determining growth, development, and health during the sequence of events that comprise the human life cycle. Changes in nutrient needs in relation to physical, physiologic, and psychosocial growth and development throughout the life cycle are discussed. The effect of various influences on diet during the life cycle and the nutritional priorities for each stage of the life cycle are covered. Dietary guidelines for health maintenance and disease prevention throughout the life cycle are included. Finally, the importance of nutritional assessment of the population in health care and public policy and in reducing health care costs, by preventing disease, is emphasized. 3 credit hours.

DI 405 Community and Institutional Nutrition
Emphasizes tools for developing effective dietetic programs in the community. Looks at the organization and development of action plans. Develops knowledge of the fundamentals of the political and legislative process. Discussion of nutritional problems that may be secondary to other health, social, and economic influences. 3 credit hours.

DI 450-455/499 Special Topics
Selected topics in dietetics, health care, food service management, team concepts, and a variety of current issues. 3 credit hours.

DI 597 Dietetic Practicum
An elective course that provides an opportunity for students to gain practical work experience in the dietetics field. Students must spend a total of 130 hours at a field site under the supervision of a registered dietician and an additional 20 hours of course time devoted to preparation of a term paper or case study directly related to their practicum experience. This opportunity will help students meet competencies required for entry into a post-graduate internship. 3 credit hours.

DI 599 Independent Study
Prerequisite: permission of the program coordinator. Independent research projects or other approved phases of independent study. 3 credit hours.

ENGLISH

Note: E 105 and E 110 are required by all departments in the university and must be taken during the student's first year at the university. They are prerequisites for all upper-level, 200 or above, English courses.

E 101 Academic Reading
Reading, analyzing and interpreting nonfiction for the purpose of learning to comprehend textbooks. 3 excess credit hours.

E 102 Academic Reading and Speaking
Reading, analyzing, and interpreting nonfiction for the purpose of learning to comprehend textbooks. Locating and organizing material for public speaking and presenting it with confidence and fluency. Open only to Developmental Bloc students. 3 excess credit hours.

E 103 Fundamentals
Designed to increase awareness of the structure of English. Intensive practice in writing to improve the student's ability to construct effective sentences, paragraphs and short essays. 3 excess credit hours, 6 class hours per week. (See section titled Developmental Studies Program elsewhere in this catalog.)

E 104 Fundamentals
For international students. Same course description as E 103.

E 105 Composition
Prerequisite: E 103 or placement by English department. Analytical study of essays for the purpose of improving skills of written communication. Practice in writing in a variety of rhetorical modes with emphasis upon clarity and precision. 3 credit hours.

E 106 Composition
For international students. Same course description as E 105.

E 110 Composition and Literature
Prerequisite: E 105 or placement by the English department. Reading, analyzing, and interpreting literature in three basic genres: fiction, poetry, and drama. Writing of analytical and critical essays. Theatre fee for day sections. 3 credit hours.

E 111 Composition and Literature
For international students. Same course description as E 110.

E 201 Early World Literature
Prerequisite: E 110. Selected world classics of prose, poetry, and drama from ancient times through the sixteenth century, written in or translated into English. 3 credit hours.

E 202 Modern World Literature
Prerequisite: E 110. Selected world classics of prose, poetry, and drama from the seventeenth century to the present, written in or translated into English. 3 credit hours.

E 211 Early British Writers
Prerequisite: E 110. A study of important British writers from the beginning of literature in English through the Neoclassic era. 3 credit hours.

E 212 Modern British Writers
Prerequisite: E 110. A study of important British writers from the Romantic era to the present. 3 credit hours.

E 213 Early American Writers
Prerequisite: E 110. A study of important American writers from Colonial times to the 1850s. 3 credit hours.

E 214 Modern American Writers
Prerequisite: E 110. A study of important American writers from the 1860s to the present. 3 credit hours.

E 217 African-American Literature I
Prerequisite: E 110. A survey of African-American writers from the late 1700s to 1940. Texts selected from a variety of genres with emphasis on the African-American experience and heritage. 3 credit hours.

E 218 African-American Literature II
Prerequisite: E 217 or permission of instructor. A survey of African-American writers from the Harlem Renaissance to the present. Texts selected from a variety of genres with emphasis on the African-American experience and heritage. 3 credit hours.

E 220 Writing for Business and Industry
Prerequisite: E 110. Intensive practice in the various types of writing required of executives, business people, engineers, and other professionals, with emphasis on business letters, memos, resumes, internal and external reports, evaluations and recommendations, descriptions of procedures and processes. 3 credit hours.

E 225 Technical Writing and Presentation
Prerequisite: E 110. Intensive practice in the common forms of technical writing, with emphasis on technical description, processes, reports, and manuals. Oral presentation of written work. 3 credit hours.

E 230 Public Speaking and Group Discussion
Development of proficiency in organizing and presenting material in speaking, group interaction, conference management, and small-group discussion. 3 credit hours.

E 251 Narrative Nonfiction
Prerequisite: E 110. Exploration of and practice in writing "the fourth genre," creative nonfiction. Emphasis on the short piece, the literary memoir, and the personal essay. 3 credit hours.

E 260 The Short Story
Prerequisite: E 110. A critical study of the best stories of American and British writers as well as stories, in translation, of writers of other nationalities. 3 credit hours.

E 267 Creative Writing I
Prerequisite: E 110. Exercises and instruction in writing short fiction and poetry. Composing, critiquing, and editing skills developed in workshop format. 3 credit hours.

E 268 Creative Writing II
Prerequisite: E 267. Advanced exercises and instruction in writing short fiction and poetry. Composing, critiquing, and editing skills refined in workshop format. 3 credit hours.

E 270 The Advanced Essay Workshop
Prerequisite: E 251 or E 267 or permission of instructor. Variable topics selected from travel, nature, science, social critique, humor. 3 credit hours.

E 275 Popular Lyrics
Prerequisite: E 110. Popular lyrics from the songs of the Jazz age, the Depression, and World War II to rock'n'roll and the music video revolution of today. 3 credit hours.

E 281 Science Fiction
Prerequisite: E 110. A survey of the development of science fiction during the nineteenth and twentieth centuries. Reading of American, English, and European science fiction novels and short stories. 3 credit hours.

E 290 The Bible as Literature
Prerequisite: E 110. A study of literary genres in the Bible: narrative, drama, poetry, wisdom literature, books of prophecy, letters. Extensive readings in both the Old and New Testaments. 3 credit hours.

E 300 Writing Proficiency Examination
Required of each student after earning 57 credit hours (including transfer credits). See Writing Proficiency Examination statement, or contact English Department Chair.

E 323 The Renaissance in England
Prerequisite: E 110. Major writers of the English Renaissance, including Sidney, Spenser, Donne, and Milton. 3 credit hours.

E 341 Shakespeare
Prerequisite: E 110. An analysis of representative tragedies, comedies, and history plays. 3 credit hours.

E 353 Literature of the Romantic Era
Prerequisite: E 110. Poetry and prose of the major Romantics–Wordsworth, Coleridge, Byron, Shelley, Keats, Lamb, and Hazlitt–with attention given to the milieu of the writers, the Continental background, and theories of Romanticism. 3 credit hours.

E 356 Victorian Literature
Prerequisite: E 110. Poetry and prose from 1830-1900. The works of Tennyson, Browning, Arnold, Carlyle, Mill, Newman, Ruskin, and others studied in the light of the social, political and religious problems of the period. 3 credit hours.

E 371 Literature of the Neoclassic Era
Prerequisite: E 110. British writers of the period 1660-1789, with emphasis on Dryden, Pope, Swift, and Johnson. 3 credit hours.

E 390 The Novel in English
Prerequisite: E 110. Great novels written in English (with the exception of American novels, which are studied in American literature courses). 3 credit hours.

E 392 Poe, Hawthorne, and Melville
Prerequisite: E 110. A study of the poetry and fiction of the three major representatives of the tragic outlook on life in mid-nineteenth century American literature. 3 credit hours.

E 393 Mark Twain
Prerequisite: E 110. Major works by America's greatest humorist and moral spokesman studied through interactive discussions, online research, and a portfolio of course work. Selections from travel works, including Innocents Abroad; the major works, including Tom Sawyer and Huckleberry Finn; and some short stories and sketches. 3 credit hours.

E 394 American Humor
Prerequisite: E 110. Intensive study of the history of American humor and its relevance to modern America, including major humor writers from Mark Twain to Woody Allen. Taught online. 3 credit hours.

E 395 American Realism and Naturalism
Prerequisite: E 110. Readings in the works of such major realists as Howells, Twain, and James and important naturalist successors such as Norris, Crane, and Dreiser. 3 credit hours.

E 406-409 International Literature
Prerequisite: E 110. Selected poetry, drama, and fiction, in translation, from one of the following nations: Russia, France, Germany, Spain. Topic to be announced for each semester. 3 credit hours each course.

E 477 American Literature Between the World Wars
Prerequisite: E 110. A study of the achievements of the main figures of the generation that flourished between the two world wars and brought about "America's Coming of Age." Poets Ezra Pound, T.S. Eliot, Robert Frost, Wallace Stevens and William Carlos Williams; novelists Hemingway, Faulkner, Fitzgerald. 3 credit hours.

E 478 Contemporary American Literature
Prerequisite: E 110. Intensive study of recent American fiction, nonfiction, poetry, and drama. 3 credit hours.

E 480 Internship
Prerequisite: E 110. A work experience, arranged through the department, that will require the effective use of written or spoken English. 3 credit hours.

E 481-498 Studies in English
Prerequisite: E 110. Special topics in literature, speaking, or writing. 3 credit hours.

E 599 Independent Study
Prerequisites: consent of the instructor and the chair of the depart-ment; restricted to juniors and seniors who have at least a 3.0 quality point ratio. Opportunity for the student, under the direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 1-3 credit hours per semester.

ENGINEERING & APPLIED SCIENCE

EAS 103 Technology in Modern Society
Scientific and technological developments and their implications for the future of society. Prospects and problems in communications, energy sources, automation, transportation, and other technologies. Use and control of technological resources for public benefit. 3 credit hours.

EAS 107 Introduction to Engineering
Prerequisite: M109 or equivalent. Overview of the problems, perspectives, and methods of the engineering profession. Modeling of real-world problems for purposes of optimization, decision-making, and design. Practical techniques of problem formulation and analysis. 3 credit hours.

EAS 108 Engineering Workshop
Prerequisite: M 115 (may be taken concurrently). An introduction to the use of elementary statistics and basic computer modeling for engineering problem- solving. Computer packages used may include spreadsheets, databases, math packages, and drafting. 1 credit hour.

EAS 109 Project Planning and Development
Prerequisite: M 115 (may be taken concurrently). Students develop the skills required to successfully plan and implement selected projects within budgetary and time constraints using project management software. Projects use LabVIEW© programming for data acquisition and control and CAD tools and presentation software for technical communication of design information. Students gain proficiency in each of these three areas as they are applied to a series of projects spanning the course. 2 credit hours.

EAS 112 Methods of Engineering Analysis
Prerequisite: a laboratory science course. Corequisite: M 117. Students will be introduced to typical problems encountered in various branches of engineering using a case-study approach. They will gain experience using computer tools to solve these problems numerically. Skill will be developed in a spreadsheet environment, and the fundamentals of programming will be presented. Applicators involve use descriptive statistics, regression, interpolation, logical and numerical functions, sets of algebraic, differential, and finite difference equations, integration. Students are introduced to data types, assignment and conditional statements, program flow control, passing parameters, returning values with functions, arrays. 3 credit hours.

EAS 120 Chemistry with Applications to Biosystems
Prerequisites: CH 115/117, E 105, EAS 109 (or consent of instructor), M 115. Integrated concepts from chemical and life sciences including solutions, equilibrium, kinetics, thermodynamics, and electrochemistry. Extensive laboratory component illustrates the interaction between chemical and biological processes. 4 credit hours.

EAS 211 Introduction to Modeling of Engineering Systems
Prerequisite: EAS 112 or consent of instructor. Corequisites: M 118, PH 150. Modeling of simple engineering systems from different fields using empirical laws and the balance principle for mass, charge, linear momentum, and energy. Applications include introductory problems in material balances, electric circuits, fluid mechanics, statics, thermodynamics and heat transfer. Emphasis is on developing an engineering approach to problem-solving. 3 credit hours.

EAS 213 Materials in Engineering Systems
Prerequisites: CH 115, EAS 112. Corequisite: EAS 211. Properties, behavior, and application of materials (solid, liquid, and gas) are studied and demonstrated, with emphasis on selection and use in engineering systems. Topics include mechanical, electrical, magnetic, thermal, optical, rheological, and chemical properties and behavior. 3 credit hours.

EAS 222 Fundamentals of Mechanics and Materials
Prerequisites: EAS 211, EAS 213. Corequisite: M 203. Behavior of mechanical and structural systems under load. Topics include effects and distribution of forces on rigid bodies at rest; kinematics and kinetics of particles; force systems; shear and moment diagrams; force-stress-strain-deformation relationships, including torsion and combined loading; buckling and stability analysis; stress/strain transformation; Mohr's circle. 3 credit hours.

EAS 224 Fluid-Thermal Systems
Prerequisites: E 105, EAS 211, EAS 213. Corequisite: M 203. An expansive study of thermal and fluids principles and applications including laws of thermodynamics, basic power cycles, conservation laws, internal and external flows, and convective heat transfer. 3 credit hours.

EAS 230 Fundamentals and Applications of Analog Devices
Prerequisite: EAS 211 or consent of instructor. Corequisite: PH 205. Fundamental principles of analog electrical devices as applied to a variety of engineering systems, as well as hands-on experience on those devices as applied in various engineering disciplines. Applications include sensors, transformers, motors, and transmission lines. 3 credit hours.

EAS 232 Project Management and Engineering Economics
Prerequisites: EAS 109 or knowledge of the fundamentals of project management and familiarity with the basic concepts of probability and statistics. An introduction to economic analysis with emphasis on those concepts directly related to project management. Topics include analysis of alternatives, project initiation, depreciation and taxation, cost estimates, risk and uncertainty, project planning, execution, and control. 3 credit hours.

EAS 345 Applied Engineering Statistics
Prerequisites: M 118 and CS 107 or equivalent. Topics include basic terminology, data presentation, descriptive statistics, curve-surface fitting and correlation, probability and model fitting, random variables, statistical inferences, one-way analysis of variance, prediction and tolerance intervals, and control charts. 3 credit hours.

EAS 415 Professional Engineering Seminar
Prerequisite: senior status. Discussion of topics on professional

engineering and ethical matters pertaining to the practice of engineering. *This course intended for non-civil engineering majors. Civil engineering majors take CE 407.* 1 credit hour.

ECONOMICS

EC 133 Principles of Economics I
Foundations of economic analysis, including economic progress, resources, technology, private enterprise, profits, and the price system. Macroeconomics including national income, employment, and economic growth. Price levels, money and banking, the Federal Reserve System, theory of income, employment and prices, business cycles and problems of monetary, fiscal, and stabilization policy. 3 credit hours.

EC 134 Principles of Economics II
Microeconomics including markets and market structure and the allocation of resources. The distribution of income, the public economy, the international economy, and selected economic problems. 3 credit hours.

EC 200 Global Economy
Prerequisites: EC 133, EC 134. This survey provides an understanding of the linkages between the American economy and the rest of the world in a period of increased globalization. Particular emphasis will be placed on understanding the various policies of international trade and finance and their relationship to business. 3 credit hours.

EC 310 Game Theory
Prerequisites: EC 133, EC 134. The course is designed to give students an understanding of the relevance of game theory to strategy. The course will emphasize applications of gaming to strategic decision making in business. 3 credit hours.

EC 313 Behavioral Economics
Prerequisites: EC 133, EC 134. The course focuses on judgment, the cognitive aspects of decision-making, and their relevance in economics. The emphasis will be on the merging of psychology and economics in understanding how managers make decisions and how decision-making might be improved. 3 credit hours.

EC 314 Public Finance and Budgeting
Prerequisites: EC 133, EC 134, and junior standing. A general survey of government finance at the federal, state, and local levels, including government expenditures, principles of taxation, public borrowing, debt management, and fiscal policy for economic stabilization. 3 credit hours.

EC 340 Microeconomic Analysis
Prerequisites: EC 133, EC 134, and junior standing. Study of commodity and factor pricing, theory of production, cost theory, market structures under perfect and imperfect market conditions. 3 credit hours.

EC 341 Macroeconomic Analysis
Prerequisites: EC 133, EC 134, and junior standing. An investigation of the makeup of the national income and an analysis of the factors that enter into its determination. The roles of consumption, investment, government finance, and money influencing national income and output, employment, the price level and rate of growth, and policies for economic stability and growth. 3 credit hours.

EC 342 International Economics
Prerequisites: EC 133, EC 134, and junior standing. The role, importance, and currents of international commerce; the balance of international payments; foreign exchange and international finance; international trade theory; problems of payments adjustment; trade restrictions; economic development and foreign aid. 3 credit hours.

EC 425 Decision Making Economics and Uncertainty
Prerequisites: EC 133, EC 134, and QA 216. An examination of how risk and uncertainty shape decision making. The course will expose students to modern analytic tools, such as Monte Carlo simulation, that can be used to incorporate risk in business strategy and public policy. 3 credit hours.

EC 440 Economic Development
Prerequisites: EC 133, EC 134, and junior standing. Economic problems of developing countries and the policies necessary to induce growth. Individual projects required. 3 credit hours.

EC 450-454 Special Topics
Prerequisites: EC 133, and EC 434. Coverage of new and emerging topics and appreciation in economics. 3 credit hours.

EC 598 Internship
Prerequisites: EC 133, EC 134, and junior standing. On-the-job learning in selected organizations in areas

related to the student's major. 3 credit hours.

EC 599 Independent Study
Prerequisites: EC 133, EC 134, and junior standing. Independent research projects or other approved forms of independent study. 3 credit hours.

EDUCATION

ED 350 Introduction to Education and Field Study
Prerequisite: junior or senior status. This course introduces students to the field of education and includes a field component. Students will focus on the Connecticut Teaching Competencies and be given a broad overview of school- related issues, including classroom management skills. 3 credit hours.

ED 503 Human Growth and Development
A study of the major aspects of human development from conception through adolescence, presenting the important theories and research methods of the field and tracing the physical, cognitive, psychological, and social development of each chronological division. 3 credit hours.

ED 504 Educational Psychology
Content emphasizes the application of psychological principles and research results to the teaching-learning process. Includes learning principles, development, planning instruction, evaluating student performance, classroom management, and motivation. Cannot be used as a Psychology elective. 3 credit hours.

ED 508 Child Development
A study of the physical, cognitive, and social development of children, with special emphasis on major theories and research methods. Cannot be used as a Psychology elective. 3 credit hours.

ED 509 Adolescent Development
A study of the physical, cognitive, and social development of adolescents, with special emphasis on major theories and research methods. Cannot be used as a Psychology elective. 3 credit hours.

ELECTRICAL ENGINEERING

EE 155 Digital Systems I
Fundamental concepts of digital systems. Binary numbers, Boolean algebra, combinational logic design using gates, map minimization techniques. Use of modular MSI components such as adders, multiplexers, etc. Analysis and design of simple synchronous sequential circuits, including flip-flops, shift registers, and counters. Introduction to VHDL. 3 credit hours.

EE 201 Introduction to Electrical Circuits
Corequisites: M 118, PH 205. Energy effects and ideal circuit elements, independent and dependent sources; Ohm's Law and Kirchhoff's Laws; resistive networks; node and mesh analysis; Thevenin and Norton Theorems, maximum power transfer, analysis of first order networks; introduction of sinusoidal steady state, phasors, impedance, admittance. DC and transient analysis using SPICE. 3 credit hours.

EE 202 Network Analysis
Prerequisites: EE 201, M 118. Continuation of EE 201. Analysis and design of networks in sinusoidal steady state. Use of phasors and phasor diagrams, voltage and current gain, resonance, watts, VARS, power factor. Average and RMS values. Maximum power transfer. Mutual inductance, ideal transformers, Fourier series, use of SPICE in steady state analysis and design. 3 credit hours.

EE 212 Principles of Electrical Engineering
Prerequisite: EE 201. This course includes several laboratory exercises related to topics covered in EE 201 as well as new topics in EE 212; the course is equally divided between lectures and laboratory. Digital logic systems. The binary number system, binary arithmetic, decimal to binary conversion, binary codes, hexadecimal codes. Boolean algebra, AND, OR, NAND, NOR and XOR gates. Combinational logic design. Multiplexer, rom, decoders, and read and write memory. Digital systems. Sequential logic, latches and flip-flops, digital counters, registers, sequential logic design. This course is intended for non-electrical engineering majors. 3 credit hours.

EE 235 Analog Circuits
Prerequisite: EAS 230 or EE 201. In-depth analysis techniques applied to resistive circuits including a review of nodal and mesh analysis, Thevenin and Norton theorems, linearity and superposition, maximum power transfer, applications of operational amplifiers, PSPICE projects, 1st and 2nd order networks, mutual inductance and transformers, steady

state power analysis, effective and rms values, complex power, power factor, three phase circuits, power relationships, power factor correction, sinusoidal frequency analysis, resonant circuits, simple filter networks, Laplace transform and its application to circuit analysis. 3 credit hours.

EE 247 Electronics I
Prerequisite: EE 201 or EAS 230. Signals and their frequency spectrum, amplifiers, circuit models for amplifiers, frequency response. Operational amplifiers, ideal op-amps, inverting and noninverting configurations, op-amp circuits. Basic semiconductor concepts, drift currents, the p-n junctions, analysis of diode circuits, Zener diodes. BJT transistors, physical structure and modes of operation, biasing techniques, the BJT as an amplifier, biasing the BJT for discrete circuit design, analysis of the transistor as a switch. Field-effect transistors, structure and physical operation of MOSFETs, voltage-current characteristics of various FETs. FET circuits at DC, the FET as an amplifier. 3 credit hours.

EE 256 Digital Systems Laboratory
Prerequisite: EE 155. Covers digital systems test instruments. Experiments in combinational and introductory sequential circuits. Software tools, simulators. Schematic capture and introduction to hardware description languages. Design of simple digital circuits. Written and oral laboratory reports. 2 credit hours.

EE 257 Analog Circuits Laboratory
Prerequisite: EE 201 or EAS 230. Laboratory exercises and projects in dc and ac circuits including Ohm's law, Kirchhoff's laws, Mesh and Nodal Analysis, Thevenin and Norton theorems, capacitance and inductance measurements, transient behavior of RLC circuits, operational amplifiers and applications. PSPICE and LabView© are introduced; written and oral reports are required. Laboratory fee; 2 credit hours.

EE 302 Systems Analysis
Prerequisites: EE 201 or EAS 230 and M 204. Continuous-time and discrete-time signal and system properties; linear difference equations; the convolution integral and convolution sum; the Laplace transform; the Z transform; the Fourier transform of continuous-time signals. 3 credit hours.

EE 306 Electronic Materials and Devices
Prerequisite: EE 247. Semiconductor materials including doping, conduction, diffusion, p-n junction effects. Hall effect and quantum theory. Diode current-voltage relation, diode capacitance and breakdown; FET and BJT operation. Magnetic properties of matter. 3 credit hours.

EE 320 Random Signal Analysis
Prerequisite: EE 302. The elements of probability theory. Continuous and discrete random variables. Characteristic functions and central limit theorem. Stationary random processes, auto correlation, cross correlation. Power density spectrum of a stationary random process. Systems analysis with random signals. 3 credit hours.

EE 341 Numerical Methods in Engineering
Prerequisites: M 203 and a standard programming language. Topics include solutions of algebraic and transcendental equations by iterative methods; system of linear equations (matrix inversion, etc.); interpolation, numerical differentiation and integration; solution of ordinary differential equations. Scientific and engineering applications. 3 credit hours. (This course is cross-listed with M 338 Numerical Analysis.)

EE 344 Electrical Machines
Prerequisite: EE 202 or EE 235. Magnetic fields and magnetic circuits, forces and torques. Theory, characteristics, operation, testing, equivalent circuits, design concepts, and applications of direct current and alternating current machines including transformers, synchronous and induction machinery. Design of main dimensions of transformer cores, rotors and stators and armature windings. 3 credit hours.

EE 348 Electronics II
Prerequisite: EE 247. Review of FETs. Biasing the FET in discrete circuits, biasing configurations of single stage IC MOS amplifiers, FET analog switches. Differential and multistage amplifiers, the BJT differential pair, biasing in BJT integrated circuits, actively loaded differential pair, MOS differential amplifiers and multistage amplifiers. Frequency response of amplifiers, s domain analysis, poles and zeros, Bode plots, Miller effect, frequency response of differential amplifiers,

study of various wide-band amplifiers. Output stages and power amplifiers, Class A, B, and AB stages, IC power amplifiers. Analog integrated circuits, complete analysis of 741 op-amp circuit, CMOS op-amps, D/A and A/D converter circuits. 3 credit hours.

EE 349 Electronics Design Laboratory
Prerequisites: EE 257, EE 348 (may be taken concurrently). Laboratory exercises and design projects intended to give students practical experience in analog electronics. Experiments include operational amplifiers, diodes, BJTs, FETs, single and multistage amplifier design as well as open-ended design projects. PSPICE and LabView© are used; written and oral reports are required. 2 credit hours.

EE 355 Control Systems
Prerequisite: EE 302. The modeling of linear and nonlinear physical systems with discrete and continuous state space equations. Solutions to the discrete and continuous linear state equation; state transition matrices; phase variable forms. Eigenvalues and eigenvec-tors; Jordan canonical form. Controllability and observability of discrete and continuous systems. Relationships among controllability, observability, and transfer functions. The stability of discrete and continuous linear systems, Liapunov, root locus, Nyquist, feedback; PID control; lead-lag control. 3 credit hours.

EE 356 Digital Systems II
Prerequisite: EE 155 or equivalent. Course focuses on sequential logic design. Both synchronous and asynchronous techniques are covered, with an emphasis on controller-based modular design. Design with a hardware description language. Advanced topics will be covered as time permits. Course includes laboratory activity. 3 credit hours.

EE 371 Computer Engineering
Prerequisites: CS 110, EE 155. Introduction to the organization of digital computers. Stored program concept, instruction processing, memory organization, instruction formats, addressing modes, instruction sets, assembler and machine language programming. Input/output programming, direct memory access. Bus structures and control signals. Course includes laboratory activity. 3 credit hours.

EE 398 Internship
Prerequisite: Junior standing. A partnership consisting of the stu-dent, faculty, and employers/organizations providing exposure to and participation in a working engineering environment. The internship will translate classroom knowledge to a professional work environment, and the student will work and learn with practicing engineers while gaining professional experience. A minimum of 300 hours performing related engineering duties is required. No credit.

EE 410 Networking I
Prerequisite: Junior standing or consent of instructor. Reference models TCP/IP and OSI, Transmission media, Data Link Layer issues, the Medium Access Control Sublayer, Networking devices and topologies, LANs, WANs, lab experiments. 3 credit hours.

EE 437 Industrial Power Systems Engineering
Prerequisite: EE 202 or EE 235. Study of the components forming a power system, three-phase systems, transmission line modeling and design, per unit quantities, modeling of power systems, one-line diagrams, symmetrical components, sequence networks and unsymmetrical fault calculations, matrices and matrix algebra. 3 credit hours.

EE 438 Electric Power Transmission
Prerequisite: EE 437. Power system modeling for fault analysis using sequence networks, bus impedance matrix formulation, rake equivalent method, fault analysis by computer methods, transmission line ABCD parameters and distributed parameter analysis, design and performance using computers, load flow analysis, Gauss-Siedel method, Newton-Raphson method, economic load sharing, stability design and analysis using computers and FORTRAN programs. 3 credit hours.

EE 439 Electric Power Distribution
Prerequisites: EE 344, EE 437. Structure of electric power distribution, distribution transformers, subtransmission lines, substations, bus schemes, primary and secondary systems, radial and loop feeder designs, voltage drop and regulation, capacitors, power factor correction and voltage regulation, protection, buses, automatic reclosures and coordination. 3 credit hours.

EE 445 Communications Systems
Prerequisite: EE 320. The analysis and design of communications sys-

tems. Signal analysis, transmission of signals, power density spectra, amplitude, frequency and pulse modulation; pulse code modulation; digital signal transmission. Performance of communications systems and signal to noise ratio. 3 credit hours.

EE 446 Digital Electronic Circuits
Prerequisite: EE 247. Analysis and design of digital circuit classes (comparators and logical gates) by application of Ebers-Moll transistor model (saturation/active/cutoff regions). Comparators treated as overdriven differential/operational amplifiers, including bistable Schmitt trigger. Gates treated for major technologies: resistor-transistor logic (RTL), transistor-transistor logic (TTL), and emitter-coupled logic (ECL). Related integrated circuit analysis including internal variables and I-O characteristics. 3 credit hours.

EE 450 Analog Filter Design
Prerequisite: EE 202 or EE 235. Techniques in the analysis and design of analog filters. First order and second order. Design of Butterworth, Chebyshev, Bessel-Thomson, and Cauer lowpass. Lowpass to band-pass, bandstop and highpass filter transformations, design, and sensitivity analysis. 3 credit hours.

EE 452 Digital Filter Design
Prerequisite: EE 302. Techniques in the analysis and design of digital filters. Digital filters terminology and frequency response. FIR filter design. IIR digital filter design including Butterworth, Cauer, and Chebyshev lowpass, highpass, bandpass, and bandstop filters. The DFT and IDFT. FFT algorithms. 3 credit hours.

EE 455 Control System Design
Prerequisite: EE 355, working knowledge of Matlab and Simulink, or consent of the instructor. The objective of this course is to introduce the student to techniques needed for the design and implementation of automatic control systems. Practical applications of the methods studied in this course include a space shuttle, water tank, a space station, blood pressure control, airplane lateral dynamics, robot-controlled motorcycle, automobile velocity control, six legged amber, hot ingot robot control, milling machine control, diesel electric locomotive, digital audio tape speed control, and fly-by-wire control. 3 credit hours.

EE 456 Hardware Description Language
Prerequisite: EE 356. General structure of VHSIC Hardware Description Language (VHDL) code; entities and architecture in VHDL; signals, variables, data types; concurrent signal assignment statements; if, case and loop statements; components; package; functions and procedures; slices; attributes; generate statement; blocks; projects on design of combinational and sequential circuits using VHDL. 3 credit hours.

EE 457 Design Preparation
Prerequisites: EE 349 and the consent of the instructor. This course provides the student time and guidance in selecting a topic for the senior design course (EE 458), which follows this one. Suitable design projects may be suggested by the student or the faculty or via industrial contacts. Each student carries out a literature search in an area of interest, prepares a written proposal with a plan of action for the project, obtains approval by the faculty project advisor, and makes an oral presentation of the project proposal. 2 credit hours.

EE 458 Senior Design Laboratory
Prerequisite: EE 457. A continuation of EE 457, this course provides the student with experience at a professional level with engineering projects that involve analysis, design, construction of prototypes, and evaluation of results.

Design laboratory activity includes: Communications/Signal Process Laboratory. Prerequisites: EE 445 or EE 450 or EE 452, EE 457.

Control Systems Laboratory. Prerequisites: EE 355, EE 457.

Digital Design Laboratory. Prerequisites: EE 356, EE 371, EE 457. Corequisite: EE 472 or EE 475.

Fiber Optics/Microwave Laboratory. Prerequisite: EE 462 or EE 480, EE 457.

Machines/Power Systems Laboratory. Prerequisites EE 344, EE 437, EE 457.

Final report presentation and formal written final report required. 3 credit hours.

EE 461 Electromagnetic Theory
Prerequisites: M 203, PH 205. Basic electromagnetic theory including static fields of electric charges and magnetic fields of steady electric currents. Fundamental field laws including Coulomb's Law, Gauss's Law, BiotSavart's Law, and Ampere's Law. Maxwell's equations, scalar and

vector potentials, Laplace's equation, and boundary conditions. Magnetization, polarization. 3 credit hours.

EE 462 Electromagnetic Waves
Prerequisite: EE 461. Electromagnetic wave propagation and reflection in various structures, including coaxial, two-wire, and waveguide systems. Transmission lines. Various modes of propagation in rectangular waveguides. The dipole antenna. Linear antenna arrays. 3 credit hours.

EE 472 Computer Architecture
Prerequisite: EE 356. Introduction to theory of computing, processor design, control unit design, microprogramming, memory organization, survey of parallel processors, as time permits. 3 credit hours.

EE 475 Embedded Systems, Interfaces, and Buses
Prerequisite: EE 371. Micro-processors and peripheral devices. Hardware and software aspects of interfacing. Microprocessor-based system design. Introduction to advanced topics such as data communications, memory management, and multiprocessing, as time permits. The course is structured around laboratory exercises. 3 credit hours.

EE 480 Fiber Optic Communications
Prerequisite: EE 461. The fundamentals of lightwave technology, optical fibers, LEDs and lasers, signal degradation in optical fibers. Photodetectors, power launching and coupling, connectors and splicing techniques. Transmission link analysis. This course will include selected laboratory experiments. 3 credit hours.

EE 500 Special Topics in Electrical Engineering
Prerequisite: instructor's consent. Special topics in the field of electrical engineering. 3 credit hours.

EE 599 Independent Study
Prerequisites: consent of faculty supervisor and approval of department chair. (Refer to academic regulations for independent study.) Independent study provides the opportunity to explore an area of special interest under faculty supervision. May be repeated. 3 credit hours.

ENVIRONMENTAL SCIENCE

EN 101 Introduction to Environmental Science
Today's environmental problems have scientific, social, and political aspects to them. This course, which is required for majors and is suitable for non-majors, will focus on the scientific aspects but will not ignore the other two. The student will be introduced to the geology, biology, physics, and chemistry behind the problems and to the social and political difficulties inherent in dealing with them. Through a combination of lectures, case histories, in-class discussions, and observation of the environmental decision-making process at work, the student will gain an understanding of the complex nature of environmental problems and of the choices that must be made in solving them. *May be taken concurrently with EN 102 Environmental Science Laboratory for laboratory science credit.* Environmental Science majors and minors must take EN 102 concurrently. 3 credit hours.

EN 102 Environmental Science Laboratory
Corequisite: EN 101. A laboratory to accompany EN 101 Introduction to Environmental Science. Laboratory and field methods of identifying, characterizing, and dealing with environmental concepts and problems such as water quality, waste disposal, ecosystem structure and change, population growth, pesticides, and food production. Some field work required. Portions of some laboratory sessions will be devoted to discussion. 1 credit hour.

EN 320 Introduction to Environmental Geology
Prerequisites: EN 101 and introductory chemistry or physics. An introduction to geology-related environmental problems and the applications of geology to environmental problem solving. Topics will include an introduction to basic physical geology, natural hazards–causes and remediation, energy and mineral resources, waste disposal, and the applications of geology to land use planning. 3 credit hours.

EN 500 Environmental Geoscience
Prerequisite: M 115 or permission of instructor. Study of the systems of atmosphere, hydrosphere, and lithosphere important in understanding the causes of and solutions to environmental problems. Includes mate-

rial from meteorology, climatology, oceanography, geology, geophysics, geomorphology, and hydrology. Some weekend field trips, or acceptable alternative, required. 3 credit hours.

EN 502 Environmental Effects of Pollutants
Prerequisites: BI 320, EN 500. The demonstrated and suspected effects of air, water, and other pollutants on natural systems and on human welfare. Methods of studying effects. Some weekend field trips, or acceptable alternative, required. 3 credit hours.

EN 521 Hydrology
Prerequisite: Any one of the following: a college-level course in physics, geology, hydraulics, or limnology or permission of instructor. Lectures cover basic hydrologic theory including nature and chemical behavior of water, precipitation and evapotranspiration, interception, surface water, ground water, water supply and treatment, and water law. Other topics may include irrigation, flood control karst hydrology, and water chemistry. Required labs cover field measurement, sampling, and problem-solving techniques. Some weekend fieldwork required. Laboratory fee; 4 credit hours.

EN 525 Geomorphology
Prerequisite: EN 500/600 or a previous college-level course in physical geology or geography or permission of instructor. Study of landforms and the processes that produce them including the operation of erosional and depositional processes in a variety of geologic settings (fluvial, coastal, glacial, periglacial, karst, and arid). Also covers relationship of landforms and processes to the solution of environmental problems. Lectures cover processes and laboratories focus on landform recognition and geomorphic process interpretation using maps and aerial photographs. Two required field trips (one 2-day and one 2 1/2-day) with shared transportation and costs. Laboratory fee; 4 credit hours.

EN 527 Soil Science
Prerequisite: EN 500/600 or a previous college-level course in physical geology/geography or permission of instructor. Properties, occurrence, and management of soil as a natural resource. Covers the chemistry, physics, morphology, and mineralogy of soils and their genesis and classification. Soil properties will be related to their role in environmental problem solving and decision making. 3 credit hours.

EN 533 Special Topics in Field Geology
Prerequisites: EN 500/600 or a previous college-level course in geology; other prerequisite(s) dependent on specific course topic. Selected field studies and trips of special interest. Credit varies depending on the length of the trip or investigation. May be taken more than once. 1-4 credit hours.

EN 540 Introduction to Geographical Information Systems
Survey of GIS technology, research, and applications in natural resource management, environmental assessment, urban planning, business, marketing and real estate, law enforcement, public administration, and emergency preparedness. Includes critical evaluation, case studies, and computer demonstrations. Laboratory fee; 3 credit hours.

EN 541 Geographical Information System Techniques and Applications I
Prerequisites: working knowledge of PC-based computing and consent of instructor/program coordinator. First of a two-course sequence on GIS technology and applications. Laboratory exercises using both raster- and vector-based GIS systems. Hardware and software components of GIS; data acquisition, input, and manipulation; cartographic output; report generation. Laboratory fee; 3 credit hours.

EN 542 Geographical Information System Techniques and Applications II
Prerequisite: EN 541 or consent of instructor. Second of a two-course sequence on GIS technology and applications. Laboratory exercises using both raster- and vector-based GIS systems. Advanced GIS techniques; spatial analysis and modeling for a variety of applications (e.g., environmental science, business, planning); development of GIS systems. Laboratory fee; 3 credit hours.

EN 543 Application of GIS in Environmental Science
Prerequisite: EN 642 or consent of instructor. Application of advanced GIS techniques to environmental assessment and management constructed around a real-world project from a government agency or nonprofit organization. Students will collaborate to design and implement the complete GIS application. Definition of project goals, special project needs, and steps necessary

for successful completion. Laboratory fee; 3 credit hours.

EN 590 Special Topics in Environmental Science
Prerequisites depend on the specific course content. Essentially, the course is a study of selected field studies, projects, and/or occasional trips of special interest. 1-4 credit hours.

EN 598 Internship
Prerequisite: permission of advisor. An opportunity for field/work experience under the supervision of a faculty advisor. 3 credit hours.

EN 599 Independent Study
Prerequisites: environmental science major, consent of the department. Weekly conferences with advisor. Three hours of work per week required per credit hour. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest. A written report of the work carried out is required. 1-6 credit hours; maximum of 6.

FRESHMAN EXPERIENCE

FE 001 Freshman Experience Seminar
A ten-week course required for graduation is offered during the first semester of study for all first-time, full-time freshman day students. The goal of this team-taught seminar class is to give students the tools to help them understand and succeed in a competitive environment by addressing such topics as academic standards, diversity, time and stress management, college life vs. high school, university relationships, responsible human sexuality, exploration of self, alcohol and substance abuse, and real-life learning. Seminar fee; 1 credit hour.

FINANCE

FI 213 Business Finance
Prerequisites: A 101, EC 133, QA 216. An introduction to the principles of financial management and the impact of financial markets and institutions on that managerial function. An analytic emphasis will be placed on the tools and techniques of the investment, financing, and dividend decision. In addition, the institutional aspects of financial markets, including a description of financial instruments, will be developed. 3 credit hours.

FI 314 Principles of Real Estate
Prerequisite: FI 213. An introduction to the fundamentals of real estate practice and the essentials of the various aspects of the real estate business. Emphasis will be placed on brokerage, mortgage financing, investments, management, and valuation relative to commercial and industrial real estate. 3 credit hours.

FI 327 Risk and Insurance
Prerequisite: FI 213. An examination and evaluation of risk in business affairs and the appropriate methods for handling it from the viewpoint of the business firm. Emphasis will be placed on, and extended consideration devoted to, the various forms of insurance coverage. 3 credit hours.

FI 330 Investment Analysis and Management
Prerequisite: FI 213. An analysis of the determinants of valuation for common stocks, preferred stocks, bonds, convertible bonds and preferred stock, stock warrants, and puts and calls. Emphasis will be placed on the analytic techniques of security analysis, portfolio analysis, and portfolio selection. 3 credit hours.

FI 341 Financial Decision Making
Prerequisite: FI 330. An examination of the conceptual foundations underlying portfolio theory, capital market theory, and firm financial decision making. Emphasis will be placed on an integrated analysis of firm financial decision making under varying conditions of certainty and capital market perfections. 3 credit hours.

FI 345 Financial Institutions and Markets
Prerequisite: FI 213 (may be taken concurrently). An examination of the relationship between the financial system and the level, growth, and stability of economic activity. Emphasis will be placed on the theory, structure, and regulation of financial markets and institutions, coupled with the role of capital market yields as the mechanism that allocates savings to economic investment. 3 credit hours.

FI 371 Structuring and Financing a New Business
Prerequisite: FI 213. This course covers the financing requirements for a new business start-up. Students will learn the process of evaluating a venture and structuring the deal for

raising money to finance the business. 3 credit hours.

FI 425 International Finance
Prerequisite: FI 213. An introduction to the theory and determination of foreign exchange rates, mechanisms of adjustment to balance of payments disturbance, fixed vs. flexible exchange rates. The international reserve supply mechanism and proposals for reform of the international monetary system. 3 credit hours.

FI 429 Corporate Financial Management
Prerequisite: FI 213. A comprehensive analysis of the structure of optimal decisions relative to the functional areas of corporate financial decision making. Emphasis is placed on developing an understanding of the applications and limitations of decision models for the investment, financing, and dividend decisions of the corporation. Topics include firm valuation, capital budgeting, risk analysis, cost of capital, capital structure, and working capital management. 3 credit hours.

FI 450-454 Special Topics in Finance
Prerequisites: FI 213, junior-level standing unless otherwise specified in course schedule description, and instructor or finance coordinator approval. In-depth coverage of a selected topic in finance. 3 credit hours.

FI 597 Practicum
Prerequisite: FI 213. A course of study designed especially for the supervised practical application of previously studied theory in a group setting. Done under the supervision of a faculty sponsor and coordinated with a business organization. 3 credit hours.

FI 598 Internship
Prerequisite: FI 213.On-the-job learning in selected organizations in areas related to the student's major. 3 credit hours.

FI 599 Independent Study
Prerequisite: FI 213. The student undertakes independent research in finance under supervision of an instructor. The topic and meetings will be coordinated with the instructor. Research findings are presented in a formal paper. 3 credit hours.

FRENCH

FR 101-102 Elementary French I and II
Stresses pronunciation, aural and reading comprehension, basic conversation, and the fundamental principles of grammar. 3 credit hours each term.

FR 201-202 Intermediate French I and II
Prerequisites: FR 101-102 or equivalent. Stresses the reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to do some reading in their own areas of interest. 3 credit hours each term.

FIRE SCIENCE

FS 102 Principles of Fire Science Technology
Introduction to fire science. Review of the role, history, and philosophy of fire protection in the United States. Particular emphasis placed on identifying fire hazards and finding appropriate methods of protecting life and property from fire. Includes career orientation and discussion of current and future problems in fire protection. 3 credit hours.

FS 106 Emergency Scene Operations
The responsibilities and operating modes of officers commanding fire department units, including engine, ladder, and rescue companies. A basic study of the Incident Command System and its application. Initial evaluation of the problems confronting first responding units. Outline of particular problems encountered in various types of occupancies, buildings, and situations. Stress on safety of the operating forces as well as of the public. Standpipe and sprinkler system utilization. Overhauling operations. 3 credit hours.

FS 201 Essentials of Fire Chemistry and Physics with Laboratory
Prerequisite: CH 105/105L or CH 115/117 as required by a specific major. The characteristics of fire behavior will be studied as they relate to the chemical requirements for combustion, the chemistry and physics of fuels and explosive mixtures, and the various methods of stopping combustion. Analysis of the properties of materials affecting fire behavior. Elements of fire modeling. 4 credit hours.

FS 203 Fire and Casualty Insurance
Provides a working knowledge of the property and casualty insurance industry with an emphasis on prop-

erty and liability coverages. The basic fire insurance policy is studied in depth. Methods of rating buildings to promulgate a property insurance rate. Various methods of estimating the replacement cost and actual cash value of buildings are practiced. The concept of HPR (Highly Protected Risk) is studied. 3 credit hours.

FS 204 Fire Investigation I
An analysis of fire investigations from the viewpoint of the field investigator. An in-depth study of determining the cause and origin of fires. Proper protection and collection of evidence will be covered. 3 credit hours.

FS 205 Fire Protection Hydraulics and Water Supply
Prerequisites: FS 102; M127 or M109. This course provides a foundation of theoretical knowledge in order to understand the principles for the use of water in fire protection and to apply hydraulic principles to analyze and to solve water supply problems. 3 credit hours.

FS 207 Fundamentals of Fire Prevention
Fundamentals of fire loss; standards; fire laws; and the engineering, chemistry, and physics related to fire protection and prevention. Fire inspection practices and procedures as well as the fire and safety problems involved in various occupancies will be discussed in depth. 3 credit hours.

FS 208 Instructor Methodology
A study of the methods and techniques of teaching fire safety and security to public safety and industrial employees. The use and development of visual aids. Actual teaching demonstrations and practice. 3 credit hours.

FS 301 Building Construction Codes and Standards
Prerequisite: FS 102. An in-depth study of building construction with a particular emphasis on how each type of construction reacts to conditions present during a fire. Emergency responder safety will be a key issue. Potential signs of collapse will be studied in depth. The codes involved in building construction and fire/life safety. 3 credit hours.

FS 302 Chemistry of Hazardous Materials
Prerequisite: FS 201. An in-depth study of the chemical and physical properties of a wide variety of hazardous materials to enable the student to establish the safety measures in a hazardous chemical environment. Basic properties of hazardous materials and appropriate handling methods. Explanation of chemical reactions, toxicity, oxidation, characteristics of explosives, plastics, resins, and fibers. 3 credit hours.

FS 303 Process and Transportation Hazards
Prerequisite: FS 201. A strong overview of the types and properties of hazardous materials as well as their modes and methods of transportation, storage, and use. Types and hazards of various containers. In-depth study of identification and control of emergencies involving hazardous materials. The various marking systems used to aid in identification. 3 credit hours.

FS 304 Fire Detection and Control
Prerequisite: FS 102. An overview of fire detection and suppression equipment as well as the associated NFPA standards. Various types of fire detectors and detection/alarm systems. Basic electric circuits and the proper application, design, and installation of these systems. Non-water-based fire suppression systems. 3 credit hours.

FS 305 Fire Detection and Control Laboratory
Corequisite: FS 304. Electrical circuitry as applied to fire alarm/detection systems. Practical experience with various panels and detectors. Advantages and disadvantages of open vs. closed circuits; methods of overcoming circuit disadvantages. 1 credit hour.

FS 307 Municipal Fire Administration
Prerequisites: FS 102, FS 201, FS 207. Delineates the fire safety problem; explores accepted administrative methods for getting work done; covers financial considerations, personnel management, fire insurance rates, water supply, buildings and equipment, distribution of forces, communications, legal considerations, fire prevention, fire investigation, emergency medical services, and records and reports. Designed for individuals involved in providing fire protection and EMS services in the public or private sector as well as those in safety or insurance. 3 credit hours.

FS 308 Industrial Fire Protection I
Prerequisite: FS 102 or consent of instructor. Examines fire hazards

and potential fire causes in business and industry. Provides an exploration of management and organizational principles with emphasis on industrial fire protection equipment, fire brigades, loss control programs, life safety, and OSHA regulations dealing with industry. 3 credit hours.

FS 309 Industrial Fire Protection II
Prerequisite: FS 102 or consent of instructor. Examination of industrial risk used in industry and process safety management. Fire hazard evaluation techniques will be discussed utilizing quantitative and qualitative evaluation methods. Risk assessments are incorporated using event likelihood, system reliability, and human error. These will be used to make cost-effective decisions regarding personnel safety, continuity of operations, and property protection in industrial occupancies. 3 credit hours.

FS 311 Fire Protection Fluids and Systems
Prerequisites: FS 102, M 109, M 127. Corequisite: FS 312. Application of the principles of hydraulics to the design phase of any automatic fire suppression systems. Application of the current codes and standards with respect to the selection, design, and installation of such systems. The fundamentals of hydraulically calculated automatic fire suppression systems are the focus of the course. 3 credit hours.

FS 312 Fire Protection Fluids and Systems Laboratory
Corequisite: FS 311. This course supplements FS 311 Fire Protection Fluids and Systems by providing a more in-depth study of the hydraulic principles used in designing water-based fire suppression systems. The process of designing and reviewing hydraulic-designed automatic sprinkler systems, including the use of computer programs for these purposes. Hands- on testing of fire protection water supplies. 1 credit hour.

FS 313 Fire Investigation II
Prerequisite: FS 204. An advanced course geared towards personnel who have or may have statutory responsibility for fire investigation in the public sector and for private sector persons who conduct or may conduct investigations for insurance companies or litigation purposes. Proper techniques for investigation of fires and explosions will be studied in depth along with the appropriate standards. 3 credit hours.

FS 314 Fire Investigation II Laboratory
Corequisite: FS 313. Experiments and practical experience in fire investigation with an emphasis on proper investigative techniques. 1 credit hour.

FS 325 Fire/Life Safety Codes
Study of NFPA-101 Life Safety Code in depth, along with the various occupancies involved within structures. The basic concepts, interrelationships of these requirements, and the need for redundancy of safeguards provided. Application of this and other applicable codes; building codes and other reference codes. 3 credit hours.

FS 404 Special Hazards Control
Prerequisite: FS 102. Types of industrial processes requiring special fire protection treatment such as heating equipment, flammable liquids, gases, and dusts. Emphasis on fundamental theories involved, inspection methods, determination of relative hazard, application of codes and standards, and economics of installed protection systems. 3 credit hours.

FS 405 Emergency Incident Management
Prerequisite: FS 106. A study of the effective organization and management of emergency resources at various fire and large-scale emergency incidents. Includes a review of national standards and federal regulations impacting emergency incident management. Case studies of actual and theoretical incidents will be used to reinforce command and control concepts. 3 credit hours.

FS 408 Fire Protection Law
A study of law in relation to fire protection, liability of personnel, civil service, the search of the fire scene, and criminal law related to arson and arson arrests. 3 credit hours.

FS 409 Arson for Profit
Prerequisite: FS 313/314. An overview of the financial techniques needed to investigate arson-for-profit fires with emphasis on sources of information, identification, and analysis of financial documents. 3 credit hours.

FS 425 Fire Protection Plan Review
Prerequisites: FS 301, FS 304/305, FS 311/312. The technical and hands-on practical experience necessary to complete a review of plans, specifications, and shop drawings for fire/life safety systems. Systems and topics include, but are not limited

to, construction; fire resistance rated assemblies; means of egress; occupancy classification; emergency systems; fire detection, alarm, and communication systems; automatic and manual extinguishing systems; and HVAC systems. 3 credit hours.

FS 450 Fire Protection Heat Transfer
Prerequisite: ME 301. The essentials of fire spread and fire behavior: the combustion process, heat transfer, limits of flammability, flames and fire plumes, burning of fuels, flaming combustion, spread of flame, flash-over, and production and movement of smoke. 3 credit hours.

FS 460 Fire Hazards Analysis
Prerequisites: FS 301, FS 304/305, FS 311/312. The application of systems analysis, probability, engineering economy, and risk management techniques to the fire problem. The basic principles of fire growth and spread in a building. Time lines will be established from the time of ignition to that of extinguishment. Various methods of modifying the time line. 3 credit hours.

FS 497 Research Project
Designed to allow fire science majors to research a topic of special interest to the individual student. Development of a student project and a written report in a specific area of fire science, with faculty supervision. Grade awarded upon completion of the project. 3 credit hours.

FS 498 Research Project I
Designed to allow fire science majors to research a topic of special interest to the individual student. Development of a student project and a written report in a specific area of fire science, with faculty supervision. Grade awarded upon completion of the project. 1 credit hour.

FS 499 Research Project II
Designed to allow fire science majors to research a topic of special interest to the individual student. Development of a student project and a written report in a specific area of fire science, with faculty supervision. Grade awarded upon completion of the project. 2 credit hours.

FS 500 Special Topics
Selected topics in fire science on a variety of current problems and specialized areas not available in the regular curriculum. 3 credit hours.

FS 501 Internship
Prerequisite: consent of the director of the fire science program. The purpose of the fire science internship is to provide the student with real-life work experience. The student will be placed with an agency, the sponsor, who agrees to provide a meaningful work experience for the intern. The intern is required to spend a minimum of 128 hours with the sponsor and prepare a paper outlining the experience. 3 credit hours.

FS 502 Emergency Medical Technician
This course is designed to prepare the basic emergency medical technician in accordance with the U.S. Dept. of Transportation curriculum and Connecticut EMS guidelines. The course covers an introductory survey of emergency medical services including medical and legal/ethical aspects, role of the EMT, CPR at the American Heart Association Basic Rescuer Level, patient assessment, care of wounds and fractures, airway maintenance, medical and environmental emergencies, patient transportation, emergency childbirth, and basic extrication. Students can expect to spend some time involved in practical experiences. Laboratory fee; 6 credit hours.

FS 510 Senior Seminar
This course will integrate current and developing knowledge of the behavior of fire with the problems presented by today's building construction, building materials, and building codes. This course will use the seminar format with full student participation. 3 credit hours.

FS 599 Independent Study
Prerequisite: consent of the director of the fire science program. The independent study is designed to allow the fire science major to complete a fire science course that is not being offered or that the student is otherwise unable to complete in the traditional manner. This self-study opportunity will be allowed only with permission of the director of fire science after determining that the student has sufficient background in the subject to complete the material in a satisfactory manner. 3 credit hours.

GERMAN

GR 101-102 Elementary German I and II
Stresses pronunciation, aural and reading comprehension, basic con-

versation, and the fundamental principles of grammar. 3 credit hours each term.

GR 201-202 Intermediate German I and II
Prerequisites: GR 101-102 or the equivalent. Stresses the reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to read in their own areas of interest. 3 credit hours each term.

GLOBAL STUDIES

GLS 100 Culture, Order, and Public Policy
As the foundation course of the Global Studies program, this course is designed to provide a comprehensive survey of the multiple factors and forces shaping the world's political culture, actors, and responses to threats to civilization: war, poverty, injustice, pollution, hunger, disease, and disorder. The course explores values, institutions, and processes among cultures, governments, interests, and policy outcomes. 3 credit hours.

GLS 490 Global Studies Internship
This course provides a capstone experience for majors in the Global Studies BA program. Interns will be placed in non-governmental organizations with a global focus, federal and state agencies, and multinational corporations. At least 150 hours of substantive involvement with the internship site are required. 3 credit hours.

HISTORY

HS 101 Foundations of the Western World
Traces the course of western civilization from its earliest beginnings in the ancient Middle East down to the eighteenth century. Includes major cultural trends, interactions between society and economy, and analysis of the rise and fall of empires. 3 credit hours.

HS 102 The Western World in Modern Times
Europe and its global impact from the eighteenth century to the present. Includes revolutionary movements, the evolution of mass democracy, and the world wars of the twentieth century. 3 credit hours.

HS 108 History of Science
The development of science and technology from antiquity to the present. Their impact on society and the world. 3 credit hours.

HS 110 American History Since 1607
A one-semester survey course covering such major topics as colonial legacies, the American Revolution, nation-state building, sectional tensions, urbanization, industrialization, the rise to world power status, social and cultural developments, and post-World War II. Not open to those who have had HS 211 or HS 212. 3 credit hours.

HS 120 History of Blacks in the United States
The history and background of black people in the United States. Social, political, and cultural development. 3 credit hours.

HS 207 World History Since 1945
Survey of major events and trends since World War II. Advanced industrial societies are emphasized. Includes decolonization, East-West conflicts, and patterns of economic cooperation and competition. 3 credit hours.

HS 211 United States to 1865
Survey of American social, economic, political, and diplomatic developments from colonial times to 1865. Not open to those who have had HS 110. 3 credit hours.

HS 212 United States Since 1865
Survey of American history from 1865 to the present. Institutional and industrial expansion, periods of reform and adjustment. The U.S. as a world power. Not open to those who have had HS 110. 3 credit hours.

HS 260 Modern Asia
The ideological, cultural, and traditional political, economic, and diplomatic history of east, south, and southeast Asia from the sixteenth century to the present. 3 credit hours.

HS 262 Modern Chinese History
A study of China from 1800, including the impact of the West and Japan; transformation from monarchy to civil war to the People's Republic of China up to the present; the Republic of China on Taiwan; the incorporation of Hong Kong into the PRC. 3 credit hours.

HS 264 Modern Japanese History
An analysis of the diverse political, economic, social, military, and cultural factors which influenced the emergence of Japan as a modern

nation in the nineteenth and twentieth centuries; its post-World War II growth into an economic giant; and its current evolution. 3 credit hours.

HS 270 Europe from Renaissance Through Enlightenment
Europe from 1300 to 1800; from feudal states to nation states; development of cultural, political, social, and economic life; religious unity and religious diversity. 3 credit hours.

HS 306 Modern Technology and Western Culture
The development of the modern technological world and its relationship to social, economic, and cultural changes from the Industrial Revolution to the present. 3 credit hours.

HS 312 United States in the Twentieth Century
The interaction of political, economic, social, and intellectual events and their impact on twentieth century America. 3 credit hours.

HS 345 Europe in the Nineteenth Century
European history from the Napoleonic period to World War I; its internal development and world impact. 3 credit hours.

HS 350 Latin American History
Analyzes the history of colonial Latin America from ancient America and pre-contact fifteenth-century Europe through to the nineteenth century independence revolutions and the modern struggles with political instability and economic dependence. The focus is on how the mixture of European and New World inputs gave rise to unique Latin American cultures. 3 credit hours.

HS 351 Russia and the Soviet Union
The development of czarist Russia from 1200 to the Revolution of 1917; the former USSR from 1917 to the present. 3 credit hours.

HS 353 Modern Britain
The development of British history from the Restoration of 1660 to the present. Includes Britain's role in international affairs. Special emphasis on social and economic topics. 3 credit hours.

HS 355 Modern Germany
German civilization from the seventeenth century to the present; its impact on Europe and the world. 3 credit hours.

HS 381-389 Selected Studies in History
Special topics in history dealing with the modern world. An in-depth study of vital historical issues. 3 credit hours.

HS 446 Europe in the Twentieth Century
Recent and contemporary European history beginning with World War I. Institutional development and its changing role in politics. 3 credit hours.

HS 491 Senior Seminar
The undertaking of an independent study and research project. Required of all history majors in their senior year. 3 credit hours.

HS 599 Independent Study
Prerequisites: consent of faculty member and department chair. Opportunity for the student, under the direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 1-3 credit hours per semester with a maximum of 6.

HOTEL AND TOURISM MANAGEMENT

HTM 165 Introduction to Hospitality and Tourism
All major elements of tourism will be examined including customer travel patterns, transportation systems, major tourism suppliers, and distribution systems. The role of the hospitality industry will be explored in relationship to domestic and foreign tourism. 3 credit hours.

HTM 166 Touristic Geography I – The Western Hemisphere
A study of travel patterns and destinations in the Western Hemisphere. Included are the major highlights of North America, Central America, the Caribbean, South America, and the Antarctic. 3 credit hours.

HTM 167 Touristic Geography II – The Eastern Hemisphere
In this second course in touristic geography, the emphasis is on major destinations in the Eastern Hemisphere – the Middle East, South and East Asia, South Pacific, Pacific Islands, and Africa. The study gives the student a well-grounded knowledge of these areas. 3 credit hours.

HTM 202 Hospitality Purchasing
Introduction to the purchasing, receiving, and issuing of foods and food items. The identification of guides, preparation of specifications, and cost control procedures are stressed. 3 credit hours.

HTM 210 Applied Techniques in the Culinary Arts
This course is designed to teach the basic classical cooking techniques, including the basic principles of baking, utilizing a hands-on format. The student will apply the theories and principles acquired in the prerequisite course in the context of a professional kitchen environment. The class will emphasize concepts of efficiency, organization, cleanliness, and time management. 3 credit hours.

HTM 220 Pastry Making Techniques
This hands-on course will present the basic principles of pastry making in the context of a professional environment. From basic custards to complex doughs and batters, students will learn techniques as they create many assorted desserts and plated pastries. Cake decoration will be part of the focus of the course. 3 credit hours.

HTM 225 Restaurant Management
Prerequisite: HTM 165. A survey of restaurant operations and the successful management of food service operations. Topics include the manager's role in restaurant operations, the role of managerial leadership, staff selection and development, effective approaches to successful client relations, and approaches to maintaining the balance between food, service, and facilities quality. 3 credit hours.

HTM 226 Front Office Procedures
Students will acquire an understanding of the principles regarding procedures and intradepartmental interactions—which include sales and marketing, housekeeping, maintenance (engineering), accounting, and the food and beverage segments – while maintaining high standards of guest service. Examination of how various hospitality computer hardware and software applications assist with the above responsibilities. 3 credit hours.

HTM 227 Guest Services Management
Introduction to various management aspects of guest services, lodging, and assisted-care operations as applied to the hospitality industry. Staffing, budget preparation, materials planning, directing and controlling ongoing operations are significant sections of this course. 3 credit hours.

HTM 235 Dining Room Management
This course will provide the knowledge necessary to fully understand dining room management as essential to the success of commercial food operations. Students will practice various service techniques that include American, French, and Russian service standards as well as have the opportunity to demonstrate dining room organization, hospitality human resource and marketing techniques, and dining thematic decoration skills. 3 credit hours.

HTM 250 Lodging Operations
Analysis and evaluation of lodging operations, including assisted-care facilities, to include rooms, divisions, food and beverage, sales and marketing, engineering/maintenance, human resources, accounting, and other major functional areas. 3 credit hours.

HTM 260 Club, Resort, and Casino/Gaming Operations Management
Typical organizational structures, and management technique, and the special aspects of operations for private clubs, resorts, casino/gaming. 3 credit hours.

HTM 280 Legal Aspects of Hospitality, Tourism, and Private Clubs
An overview of specific issues and liabilities that the professional manager will face. Classic and current case studies and issues will be presented to the student, including laws that affect personal and financial advancement. 3 credit hours.

HTM 300 Principles of Baking
Prerequisite: HTM 210. The basic principles of baking presented within the context of a professional and profit-generating commercial kitchen environment. Students will demonstrate these principles through hands-on assignments in a professional kitchen lab. 3 credit hours.

HTM 304 Volume Food Production and Service
This course is designed to teach the basic principles of volume food production and service, which are so critical to the commercial food industry. Students will be preparing

meals that are consumed and analyzed by the public and applying the theories and principles acquired in the prerequisite course in the context of a professional kitchen environment. The class will emphasize concepts of efficiency, organization, cleanliness, and time management. 3 credit hours.

HTM 305 Wine Appreciation
Considers the major wines and wine regions of the world, with emphasis on American, French, and German wines. Wine tasting is an integral part of the course. Students must be 21 years of age. 3 credit hours.

HTM 307 Cultural Understanding of Food and Cuisine
The importance of food and cuisine within the context of society. This course will explore the impact of food on the evolution of mankind and address issues relating to the importance of food in the political and economic structure of the world. Questions regarding food supplies and sources as well as ethical questions facing mankind in the near future will be examined. Also explored will be the influences and perceptions of food in different cultures and how those perceptions affect intercultural understanding. 3 credit hours.

HTM 315 Beverage Management
The beverage area is perceived as a profit center for hotels and restaurants. Themes, decor, and ambiance that enhance the hospitality experience are explored. All management functions are examined; planning, staffing, accounting, marketing, and menu development are emphasized. Other pertinent topics are discussed, including liability and licensing issues. 3 credit hours.

HTM 316 Hospitality Finance and Revenue Management
Prerequisites: senior standing and consent of department chair. This course takes the experienced hospitality student through the certification process for designation as a Certified Hospitality Account Executive (CHAE) and includes the certification exam as a portion of the course and final grading process. Additionally, Hospitality Financial & Technology Professionals (HFTP) membership is included. Topics include investment trends and analysis, lease and purchase considerations, working capital finance, audit and financial management, and the CHAE exam preparation. Students are responsible for the cost and fees required for the CHAE examination and HFTP membership. 3 credit hours.

HTM 325 Destination Marketing and Sales
An in-depth study of marketing theory and techniques crucial to success in hospitality and tourism businesses and an examination of the sales process, the destination life cycle, DMOs, and market segmentation strategies. Students develop a strategic tourism plan for a hospitality and tourism organization that has a focus on sales. 3 credit hours.

HTM 335 Convention and Meeting Planning
As corporate meetings and conventions continue to increase in the worldwide tourism market, one of the newer and important career paths is that of professional meeting planners. Included in their sphere of responsibility are the meeting/organization agenda, site selection, meal planning, transportation, schedule of events, break-out sessions, leisure activities, finances, and evaluation. 3 credit hours.

HTM 340 Tourism Planning and Policy
A comprehensive review of the tourism planning and policy process used to develop or modify major tourism destinations. Aspects of the process include goals and objectives; the use of environmental, economic, marketing, topographical, and political studies; and monitoring and control procedures to assure proper planning and policy implementation. Focus on considering both tourism benefits and costs in assessing net impacts. 3 credit hours.

HTM 345 Catering and Events Management
A review of a variety of concepts germane to catering and event management within the context of the hospitality industry. Topics include themed events, outside services, audio-visual and other special effects, on-and off-premise catering and function sales, staffing, computer applications in banquet management, and general event planning. 3 credit hours.

HTM 360 Corporate Travel Planning
As airlines and hotels are funneling most of their energy, services, and amenities toward the corporate traveler, bidding for a corporate account (RFP) and servicing it successfully are exacting arts. Every aspect of the

industry is covered, including automation, cost-cutting strategies, and professionalism. 3 credit hours.

HTM 370 Tourism and the Gaming Industry
This course provides an introduction to the casino industry and examines its phenomenal growth and relationship to tourism and community development. Focus is on the concepts and definitions essential for understanding the industry and on links of its history to current gaming practices. Particular attention is paid to noted casinos in Monte Carlo, Las Vegas, and Atlantic City as well as Connecticut's Foxwoods and Mohegan Sun. 3 credit hours.

HTM 380 Resort Operations
A comprehensive review of resort operations. Content covered includes the history and development of resorts, guest services, and resort recreation functions. Students are expected to create innovative resort facilities and programs. Field trips to local resort properties may be required. 3 credit hours.

HTM 410 International Tourism
Institutions which run the international tourism industry are reviewed. The relationship between these institutions and various nations will be discussed. Participants will become familiar with the policy implications of operating in a multinational political, social, and economic environment. 3 credit hours.

HTM 430 Special Interest and Adventure Tourism
Investigates the extraordinary and ever-increasing field of special interest tourism. Provides an overview of the niche that each aspect of special interest tourism contributes to the development of the tourism industry. Adventurous travel from dog sledding in Greenland to dugout canoes in the tropics, from ballooning in the French chateaux country and Masai Mara to heli-hiking and sightseeing in the Rockies. Included also is travel for the disabled and the adventurer. 3 credit hours.

HTM 440 International Food, Buffet and Catering
Prerequisites: HTM 210, HTM 345. Students gain hands-on knowledge of the planning, organizing, preparing, and serving of international food in the context of buffet catering service. Several public events featuring an international theme and food served in a buffet setting will be planned, created, and prepared by student management teams under the supervision of a chef instructor. Gastronomy concepts will be studied as they relate to the international culture. 3 credit hours.

HTM 445 Advanced Cuisine Management and Technique
This is the capstone course in food production and service. Students are provided an opportunity to practice advanced culinary techniques within various international and domestic cuisine themes. Students are divided into management teams and develop a meal manual that includes team mission statements, pre- and post-meal cost analysis, personnel deployment, interaction with the dining room management teams, standardized recipe creations, and performance appraisal criteria. Student-managers prepare a dining experience that is offered to paying clientele. 3 credit hours.

HTM 450-454 Special Topics
Special studies of a variety of current topics and specialized areas in the field not available as part of the regular curriculum. 3 credit hours.

HTM 470 Tour Design, Marketing, and Management
This course studies the design, operation, and management of the escorted tour. Instruction covers the entire process for the tour operator from initial contact to finished product. During the semester, each student plans a tour from beginning to end, designs and writes the brochure, prices the arrangements, and shows how to successfully operate the finished product. 3 credit hours.

HTM 597 Practicum
Prerequisite: junior standing. A course of study designed especially for the supervised practical application of previously studied theory in a group setting. Done under the supervision of a faculty sponsor and coordinated with a business organization. 3 credit hours.

HTM 598 Internship
Prerequisites: completion of 600 hours of practicum and consent of instructor. Interns are required to complete 400 hours of internship experience in conjunction with the designated internship coordinator. The internship experience will emphasize supervisory responsibilities whenever possible. This experience will be formulated by the faculty, the designated coordinator, the

student, and an industry professional, a cooperative effort that helps to ensure the student's success. The internship will be augmented by written and oral reports, industry performance evaluations, and faculty oversight. 3 credit hours.

HTM 599 Independent Study
Prerequisite: permission of the department coordinator. Independent research projects or other approved phases of independent study. 3 credit hours.

HUMANITIES

HU 300 The Nature of Science
Prerequisites: E 110, HS 102, a laboratory science course, and a social science course. Investigates science as a human activity, as a social institution, and as an instrument for acquiring and using knowledge. The nature of scientific knowledge, the organization of scientific activity, and the interaction of science with technology and culture. A course about science and the process of generating new knowledge. 3 credit hours

INTERNATIONAL BUSINESS

IB 421 Operation of the Multinational Corporation
Prerequisites: EC 200, FI 213, MG 210. Specific problems encountered by multinational firms. Topics include investment decisions, environmental scanning, planning and control, and the social responsibilities of firms in host nations. 3 credit hours.

IB 422 International Business Negotiations
Prerequisites: EC 200, MG 210. An analysis of the various stages involved in the international business negotiating process, beginning with planning and ending with post-contract adjustments. A survey and evaluation of the various primary and secondary sources negotiators can go to for information needed in the negotiating process. 3 credit hours.

IB 450-454 Special Topics
Prerequisites: EC 200, junior-level standing required unless otherwise specified in course schedule description. Selected topics of special or current interest in the study of international business. 3 credit hours.

IB 549 Global Business Strategy
Prerequisite: MK 413. Identification and relation of the elements involved in the dynamics of a company and its international environment through case analysis. This is a capstone course in international business. 3 credit hours.

IB 598 Internship
Prerequisite: EC 200. Supervised field experience for qualified students in areas related to their major. 3 credit hours.

IB 599 Independent Study
Prerequisite: EC 200. A planned program of individual study under the supervision of a member of the faculty. 3 credit hours.

INTERIOR DESIGN

ID 100 Portfolio Design
Prerequisite: AT 211 Basic Design I or consent of the instructor. This is a foundation course in the branding design of a professional portfolio and related documents for internships, job interviews, and career development. Branding, logo design, business cards, letterheads, and related stationery will be designed, critiqued, and implemented for use in art and design projects throughout the program. 1 credit hour. Laboratory fee; 3 credit hours.

ID 109 Architectural Drawing I
An introduction to drafting with an emphasis on the use of mechanical drawing tools to accomplish beginning architectural drawing. Skills in lettering, dimensioning, drawing, titling, symbols, symbol cross-referencing, line weights, drawing formatting, the developing of notes and specifications, concept sketching, and the reading of blueprints and construction documents for building purposes will be developed. The principles of orthographic and paraline drawing will be explored and developed and drawings produced. Laboratory fee; 3 credit hours.

ID 110 Architectural Drawing II
Prerequisite: ID 109. A continuation of ID 109 with a focus on one-point perspective for interior and exterior spaces, furniture and related objects utilizing a variety of scales and the three-dimensional One-Point Perspective Grid system of drawing. Drawings will include sketch concepts, orthographic evaluations and representations with multiple one-point perspective views, and sectional perspectives. Laboratory fee; 3 credit hours.

ID 200 Portfolio Production I
Prerequisite: ID 100. This is a studio course in the application of port-

folio design branding elements to the production of portfolio pages from art and design projects. Professional standards and a clear brand identity will be applied to the portfolio for career development and advancement. Laboratory fee; 1 credit hour.

ID 211 Interior Design I
Prerequisites: ID 110, AT 212, and AT 213. In this introductory studio course students will explore the elements and principles of design as they relate to interior environments. The relationship between the built environment and human factors will be discussed as they relate to circulation and furniture layouts. In addition, the history and criteria that establish interior design as a profession are explored in detail. Laboratory fee; 3 credit hours.

ID 212 Interior Design II
Prerequisite: ID 211. A continuation of ID 211 with a focus on programming and design using two-dimensional methods of problem solving and presentation. Residential and commercial spaces are explored using study models and finished models, sample boards, and rendered perspectives for presentations. Laboratory fee; 3 credit hours.

ID 213 Architectural Drawing III
Prerequisite: ID 110. An advanced course in two-point and multi-point perspective drawing of interior and exterior spaces, furniture, and related objects utilizing a variety of scales. Drawings will include sketched concepts, orthographic evaluations, and representations with multiple perspective point views for each project. Laboratory fee; 3 credit hours.

ID 214 Interior Lighting and Specifications
Prerequisite: ID 211 or consent of the instructor. This course surveys the use of lighting, both natural and artificial, as a design element in planning residential and commercial interiors. The impact of perception, psychology, brightness, color, and daylight are discussed. Interior lighting products including incandescent and discharge lamps are studied in detail along with auxiliary equipment, light controls, photometrics, electricity, and luminaries. Laboratory fee; 3 credit hours.

ID 215 Construction Documents I
Prerequisite: ID 110. This course introduces students to all elements of the preparation, development, and production of a complete set of construction documents for residential and commercial interior spaces including project evaluation and an in-depth understanding of document requirements, method applications, blueprint reading, specification writing, drawing nomenclature, and millwork requirements. An emphasis is placed upon the development of accurate descriptive drawing notes, specifications, dimensionings, and symbols within the construction documents. Building codes and ADA issues are explored as applicable to individual projects. Laboratory fee; 3 credit hours.

ID 216 Construction Documents II
Prerequisite: ID 215 A continuation of ID 215 with an emphasis on site measurement and documentation of existing conditions and mechanical systems, preparation of as-built drawings, oral presentation of schematic design schemes, specifications and notes, millwork drawings, details and sections, and proficiency, speed, and accuracy in preparing construction documents. Laboratory fee; 3 credit hours.

ID 217 Sketching and Rendering for Interiors
Prerequisite: ID 110 or consent of the instructor. This course advances the student's basic drawing and illustrative skills through the exploration of quick sketching and rendering techniques for architectural and interior spaces. A variety of media will be studied including markers, pastels, color pencils, watercolor, pencil, pen, etc. Focus is on the application of the media to create visual expression of the exterior and interior elements. Laboratory fee; 3 credit hours.

ID 218 Interior Systems, Materials, and Codes
Prerequisite: ID 211, ID 215, or consent of the instructor. This course explores the design and construction requirements for interior building elements and environmental systems. Issues related to interior finishes, sustainability resources, and green design are explored. Building codes, fire codes, and ADA compliance relative to the built interior environment are studied through the use of construction documents and study models. Laboratory fee; 3 credit hours.

ID 300 Portfolio Production II
Prerequisite: ID 200. This is a continuation of Portfolio Production I. Students at this level continue to

design and complete portfolio pages for their senior portfolio. Laboratory fee; 1 credit hour.

ID 311 Interior Design III
Prerequisites: ID 212, ID 216. This course explores the specialized field of kitchen and bath design for residential and commercial interiors. All aspects of programming, design, specification, preparation, development, and production of design and construction documents for residential and commercial kitchens and baths are developed in detail. An emphasis is placed upon kitchen and bath design and the development of accurate descriptive drawings, notes, specifications, dimensioning, and symbols within the construction documents. Building codes and ADA issues are explored as applicable to individual projects. Laboratory fee; 3 credit hours.

ID 312 Interior Design IV
Prerequisite: ID 311, ID 313, or consent of the instructor. Advanced course in commercial interior design incorporating professional scope of services including: programming, conceptual design, design development, contract documents, contract administration, and evaluation. Focus of the course is on corporate office design, open office systems, and interior product specifications. Laboratory fee; 3 credit hours.

ID 314 CAD for Interior II
Prerequisite: ID 313 or consent of the instructor. This course is a continuation of ID 313 with a focus on the use of AutoCAD for the design and development of retail and restaurant spaces. Students will use AutoCAD to develop custom design furniture and cabinetry as well as three-dimensional images of interior spaces in a variety of paraline views. Laboratory fee; 3 credit hours.

ID 315 History of Architecture and Interiors I
This course is an introductory overview of the history of design in architecture, interiors, and furniture from the ancient era through the end of the eighteenth century. Lectures, readings, and research focus on the development of major forms, period styles, ornament, and the decorative arts from ancient Egypt, Greece, and Rome through the Renaissance, Baroque, Rococo, and Neoclassical eras. 3 credit hours.

ID 316 History of Architecture and Interiors II
This course is a continuation of ID 315. The course will explore the history of design in architecture, interiors, and furniture from the nineteenth and twentieth centuries to the present. Styles examined include nineteenth century revival styles, Arts and Crafts, Art Deco European, American Modernism, and the influence of the Bauhaus. 3 credit hours.

ID 317 Interior Products and Specifications
Prerequisite: ID 212 or consent of the instructor. Examination of interior textiles and products including fibers, upholstery and window fabrics, and wall finishes. Manufacturing, measurement, and installation methods are explored. Laboratory fee; 3 credit hours.

ID 318 Furniture Design and Specifications
Prerequisite: ID 213, 216, 311, 317 or consent of the instructor. This is an advanced course in furniture design and construction drawings concentrating on upholstery, furniture, and manufacturing processes for residential and commercial furniture markets. Issues of marketing, qualifying designs with manufacturers, contracts, and negotiations will be addressed. Laboratory fee; 3 credit hours.

ID 400 Senior Portfolio
Prerequisite: ID 300. This advanced course completes the production of the senior portfolio and incorporates career preparation activities. Job search documents such as resumes, cover letters, and thank you letters are prepared incorporating the student's brand identity. Interviews and job contracts are explored, and the course culminates in a senior portfolio presentation and interview. Laboratory fee; 1 credit hour.

ID 411 Interior Design V
Prerequisite: ID 312, ID 314, or consent of the instructor. Advanced senior-level course in institutional interior design incorporating professional scope of services including programming, conceptual design, design development, contract documents, contract administration, and evaluation. Special attention is focused on individual user needs with respect to health, safety, and welfare issues within the interior environment. Laboratory fee; 3 credit hours.

ID 412 Interior Design VI
Prerequisite: ID 411 or consent of the instructor. Advanced senior level course in historic preservation, sustainable design, and green design incorporating professional scope of

services including programming, conceptual design, design development, contract documents, contract administration, and evaluation. Special attention is focused on environmental issues and innovative design solutions. Laboratory fee; 3 credit hours.

ID 413 Professional Practices for Interior Designers
Prerequisite: ID 312 or consent of the instructor. Provides fundamental understanding of business practices for the design professional. Survey of business types, professional counsel and liability, ethics, marketing and selling of services and products, and fee structures. Examination and preparation of business forms including Letters of Agreement, budget estimates, purchase orders, and invoicing. Laboratory fee; 3 credit hours.

ID 598 Internship for Interior Design and Allied Fields
Prerequisite: ID 312 or permission of the instructor. Students will have the opportunity to intern within interior design, architectural, or allied design and product industry firms. Students may seek their own internship site, or the program will match students with firms appropriate to their interests and skills. Mentors within the firms provide students with a broad range of learning opportunities. In addition, students maintain weekly email journals and research career opportunities. 3 credit hours (135 internship contact hours).

ID 599 Independent Study
Prerequisite: senior standing or consent of the instructor and department chair. Under the direction of a faculty member and an outside mentor, the student will initiate the development of a capstone project. The purpose of electing to take an independent study is to further an area of special interest, to prepare for graduate school, or to meet the Honors Program thesis requirement. 3 credit hours (135 project documented hours).

INDUSTRIAL ENGINEERING

IE 204 Engineering Economics
Prerequisites: M 117 and CS 107 or equivalent. A quantitative analysis of applied economics in engineering design; the economy study for comparing alternatives; interest formulae; quantitative methods of comparing alternatives; intangible considerations; selection and replacement economy for machines and structures; break-even and minimum cost points; depreciation; effect of income taxes on the economy study; review of current industrial practices. Promotes logical decisions through the consideration of alternative courses of action. 3 credit hours.

IE 243 Work Design
Prerequisite: sophomore status. Introductory course in the design and evaluation of efficient work methods and working environments. Techniques useful in problem definition, design of alternative work methods, and evaluation of alternative designs, including process charting, operation analysis, and principles of motion economy. Emphasis placed on human factors and safety implications of alternative work method designs. Equitable time standards are developed for work method designs through the use of time study procedures including stopwatch time study, computerized predetermined-time systems, and work sampling. 3 credit hours.

IE 302 Ergonomics
Prerequisite: junior standing. Covers basic terminology and application of ergonomic principles to the workplace. Topics include repetitive motion injuries, cumulative trauma disorders, carpal tunnel syndrome, anthropometry, human error analysis, channel capacity, reaction time, human-machine interaction, and current ergonomics news and applications. 3 credit hours.

IE 303 Cost Control
Prerequisites: junior status and M 118. Basic analysis of cost control techniques. Designed to give members of the management team the underlying rudiments of cost estimating and control systems. Theory of standard costs, flexible budgeting, and overhead handling techniques emphasized by analytical problem solution. Life-cycle costing. Value engineering. 3 credit hours.

IE 304 Production Control
Prerequisites: IE 243, M 118. The basic principles that govern the design of production control systems in an industrial plant. The principles used in solving problems of procuring and controlling materials, in planning, routing, scheduling, and dispatching, are considered. Familiarizes the student with existing and new methods used in this

field including MRP, JIT, computer-aided process planning, and group technology. 3 credit hours.

IE 311 Quality Assurance
Prerequisite: junior status. Quality considerations in product design and manufacturing; product inspection and process control; total quality management principles as applied to process design, control, and improvement; product safety and liability issues. 3 credit hours.

IE 344 Human Factors Engineering
Prerequisite: IE 347. Covers psychological and physiological aspects of people at work, including work physiology, information processing, motor skills and movement control, signal detection theory, and anthropometry with the aim of improvements in workplace design. 3 credit hours.

IE 346 Probability Analysis
Prerequisite: M 203. Develops the theory of probability and related applications. Covers combinations and permutations, probability space, law of large numbers, random variables, conditional probability. Bayes' Theorem, Markov chains, and stochastic processes. 3 credit hours.

IE 347 Statistical Analysis
Prerequisites: IE 346 and CS 107 or equivalent. Provides an introduction to the application of statistical techniques to engineering problems. Measures of central tendency and dispersion, estimation, hypothesis testing, correlation and regression, elementary analysis of variance. 3 credit hours.

IE 348 Manufacturing Processes
Corequisite: IE 304. Provides a basic understanding of manufacturing processes as applied to conventional manufacturing. Properties of material; machining fundamentals; tool geometry; surface finish; forces; material removal processes; casting, forging, and extrusion processes; measurement and inspection; process capability and quality control; ferrous and nonferrous metals; chip/type machining processes; machining economics in turning, milling, and drilling. 3 credit hours.

IE 402 Operations Research
Prerequisites: IE 346 and CS 107 or equivalent. The operations research area is oriented to various mathematical methods for solving certain kinds of industrial problems. Topics included are linear programming, including simplex method; transportation and assignment problems; queuing; dynamic programming; simulation. 3 credit hours.

IE 403 Operations Research II
Prerequisite: IE 402 or equivalent. Advanced coverage of Bayesian statistics, utility and game theory, logistics and distribution, theory of scheduling, graph theory, and stochastic processes, with applications in manufacturing and service industries. 3 credit hours.

IE 407 Reliability and Maintainability
Prerequisite: IE 346 or equivalent. Reliability measures: hazard models and product life, reliability function; static reliability models; inference theory and reliability computation; dynamic reliability models, reliability design examples. 3 credit hours.

IE 408 Systems Analysis
Prerequisites: senior status and IE 347. Presents the analytical and conceptual techniques upon which systems analysis and development are based, as applications to business and industrial fields. Development of case studies and their application, oriented to improved designs. 3 credit hours.

IE 414 Engineering Management
Prerequisite: senior status. Provides insight into the elements of the managerial process and develops a rational approach to the problems of managing productive processes and the engineering function. Focusing largely on complex problems of top and middle-level management, students will investigate the modern tools managers use under given circumstances, stressing the ongoing activities of management as part of an integrated, continuous process. 3 credit hours.

IE 435 Simulation and Applications
Prerequisites: IE 346 and CS 107 or equivalent. Corequisite: IE 402. Techniques for modeling of a system (business or scientific/engineering) using computer simulation. Simulation principles will be emphasized. Student exercises and design projects will be run using a modern simulation package. 3 credit hours.

IE 436 Quality Control
Prerequisite: IE 347. Economics of quality control; modern methods used by industry to achieve quality of product; preventing defects; organizing for quality; locating chronic sources of trouble; coordi-

nating specifications, manufacturing and inspection; measuring process capability; using inspection data to regulate manufacturing processes; statistical methods, control charts, selection of modern sampling plans. 3 credit hours.

IE 437 Metrology and Inspection in Manufacturing
Prerequisite: IE 436. The study of metrology and inspection practices in manufacturing. Emphasis on the design and development of different types of gauging for inspection in manufacturing. 3 credit hours.

IE 440 Synchronous Manufacturing
Prerequisites: IE 204 and IE 304. Group technology in design and manufacturing; manufacturing environment, resources, products, constraints, and decisions; synchronized manufacturing operations and process improvement. 3 credit hours.

IE 443 Facilities Planning
Prerequisites: senior IE status and IE 243, IE 304. Factors in plant location, design, and layout of equipment. Techniques for obtaining information essential to the development and evaluation of alternative facility layout designs are presented with an emphasis on environmental and safety considerations. Design of departmental areas, resource allocation and flow, materials handling, storage, and the economic implications of alternative designs are discussed. Students work in small groups on the design of a manufacturing facility to produce an actual consumer product. Project culminates in both written and oral presentation of the proposed facility design. CAD techniques are used extensively in the development of the final facility layout. 3 credit hours.

IE 448 Advanced Manufacturing Engineering Operations
Prerequisites: ME 200 and IE 348. A course for understanding machining economics and the basic principles of the theory of metal cutting and metal working to improve manufacturing engineering operations. Course emphasizes design and operation of better tooling for different types of manufacturing operations. Experimental investigation of metal cutting and metal working methodologies stressed. 3 credit hours.

IE 450 Special Topics in Industrial Engineering
Prerequisite: consent of instructor. Selected topics of current interest in the field of industrial engineering. 3 credit hours.

IE 460 Computer-Aided Manufacturing
Prerequisites: IE 348 and CS 107 or equivalent. Topics covered include Computer-Aided Manufacturing (CAM), Numerical Control (NC), industrial robot applications, Flexible Manufacturing Systems (FMS), Group Technology (GT), integration of CAD/ CAM, Computer Aided Process Planning (CAPP), and applications software for manufacturing. 3 credit hours.

IE 465 Robotics in Manufacturing
Prerequisite: IE 460. Topics covered include applications of robotics in manufacturing, robot classification, introduction to a high-level robot language, task planning, and laboratory projects with industrial robots. 3 credit hours.

IE 498 Internship
Prerequisites: consent of faculty supervisor and approval of department chair. Supervised project-work related to industrial engineering with local industries. 3 credit hours.

IE 504 Senior Project
Prerequisites: senior status and permission of department. The student, in conjunction with a faculty advisor, selects and works on a project. Work is presented at a seminar at the end of the semester. 3 credit hours.

IE 599 Independent Study
Prerequisite: junior status. A planned program of individual study under the supervision of a member of the faculty. 3 credit hours.

JOURNALISM

J 101 Journalism I
A survey of journalism designed to acquaint students with the profession. The American newspaper as a social institution and a medium of communication. 3 credit hours.

J 201 News Writing and Reporting
Prerequisite: CO 102 or permission of instructor. The elements of news, the style and the structure of news stories, news-gathering methods, copyreading and editing, reporting. 3 credit hours.

J 202 Advanced News Writing and Reporting
Prerequisite: J 201. Intensive practice in news writing and reporting. 3 credit hours.

J 311 Copy Desk
Prerequisite: J 201. Intensive practice in copyreading, editing and revising, headline writing, photograph selection, page make-up, and reporting. Regular critiques of the copy-desk work of major newspapers. 3 credit hours.

J 351 Journalistic Performance
Prerequisite: J 201. Students follow the coverage in the media given to selected topics and prepare to make judgments of the coverage by doing research and becoming knowledgeable about the particular topic chosen. The course stresses analytic reading and responsible, informed criticism. 3 credit hours.

J 367 Interpretive and Editorial Writing
Prerequisite: J 201. Practice in the writing of considered and knowledgeable commentaries on current affairs and of interpretive articles based on investigation, research, and interviews. 3 credit hours.

J 450-454 Special Topics in Journalism
Selected topics in journalism which are of current or special interest. 3 credit hours.

J 599 Independent Study
Prerequisites: consent of instructor and department chair. Opportunity for a student, under the direction of a faculty member, to explore an area of interest. 3 credit hours.

BUSINESS LAW

LA 101 Business Law and the Regulatory Environment
An overview of the legal system as it relates to the operation of a business. Topics will include those relating to the establishment and continuity of business relationships, including contracts, sales, partnerships, corporations, agency law, and business ethics, and those regulating business activities, including consumer protection, environmental, employment, and antitrust laws. 3 credit hours.

LA 112 Accounting Business Law
Prerequisite: LA 101. Law of agency, employer/employee, partnerships, corporations, security and governmental regulation; real, and person property law; creditors' rights and bankruptcy; wills and trusts. 3 credit hours.

LA 450-454 Special Topics
Prerequisite: LA 101. Selected topics in business law of special or current interest not covered by an existing course. 3 credit hours.

LA 598 Internship
Prerequisite: LA 101. On-the-job experience of business law in selected organizations. 3 credit hours.

LA 599 Independent Study
Prerequisites: LA 101 and junior standing. A planned program of individual study under the supervision of a member of the faculty. 3 credit hours.

LOGISTICS

LG 300 Defense Sector Logistics
Prerequisites: EAS 345 and CS 107 or equivalent. Introduction to logistics as practiced in the defense industry, the military, and multi-national corporations operating foreign installations. Overview of logistics elements, nomenclature, techniques, management, and computer support. Survey of regulations, standards, and logistics products. Identification of logistics and its place in defense-related systems. 3 credit hours.

LG 310 Introduction to Logistics Support Analysis
Prerequisite: LG 300. Definition and description of logistics support analysis with reference to MIL-STD-1388-lA and derivative requirements. Survey of integrated logistics support theory and practice and the role of LSA. The role of a logistics support analysis plan, its method of construction, and its use in real systems. 3 credit hours.

LG 320 Reliability and Maintainability Fundamentals
Prerequisite: LG 300. Basic description and analysis of the concepts of reliability and maintainability in large high-technology systems. Introduction to quantitative techniques and quality assurance. Strategies for optimizing effectiveness and in-service support. 3 credit hours.

LG 410 Life Cycle Concepts
Prerequisite: LG 320. Introduction to life cycle concepts in product design, quality engineering, field support, maintenance, training, and

end-use disposal. Techniques of life cycle costing and the construction of life cycle forecasts. Product and system warranties, and their interface with logistics support. 3 credit hours.

LG 440 Data Management in Logistics Systems
Prerequisite: LG 310. Review of the role of data collection, analysis, and report generation in logistics systems management. Uses of computer-aided management information systems, technical data acquisition, and software support in logistics organization. Requirements for documentation, data renewal, and the generation of integrated logistics support plans and reports. 3 credit hours.

LG 490 Logistics Seminar
Upon completion of LG 300, LG 310, LG 320, LG 410, and LG 440 students pursuing the certificate in logistics will be required to take this capstone seminar. Each student will develop an experiential case study in conjunction with a faculty advisor. This case study will draw on material learned in prerequisite courses and the student's work experience. Each student will be required to present the case study for critique by colleagues and industrial engineering faculty. 1 credit hour.

LEGAL STUDIES

LS 100 Introduction to Legal Concepts
Overview of the American legal system in context of historical underpinnings. Structural make-up, purpose, and functions of legal system in American society; distinction between civil and criminal law systems. Introduction to major civil law substantive areas, including torts, contracts and property, legal concepts, and reasoning. 3 credits hours.

LS 201 Legal Ethics & Professional Responsibilities
Prerequisite: PL 222. Study of legal ethics, including codes of professional responsibility and the legal professional's responsibilities in different types of organizations and occupational settings. Analysis and discussion of case studies and role playing. 3 credits hours.

LS 226 Family Law
A study of legal relations between husband and wife including marriage, annulment, divorce, alimony, separation, adoption, custody arrangements, and basic procedures of family law litigation. 3 credit hours.

LS 229 Legal Communications
Familiarization with the kinds of legal documents and written instruments employed by participants in the legal process. Recognition and understanding of the purpose of writs, complaints, briefs, memoranda, contracts, wills, and motions. 3 credit hours.

LS 238 Civil Procedure I
Prerequisite: LS 100. Study of procedural law governing civil legal actions. Includes overview of civil legal actions in state and federal courts with focus on legal principles that affect commencing and maintaining lawsuits. 3 credit hours.

LS 239 Civil Procedure II: Litigation
Prerequisite: LS 238. An examination of civil litigation from commencement of a lawsuit through trial, including pleadings, motions, discovery, and evidence. A combination of theory and practice. 3 credit hours.

LS 240 Legal Research and Writing I
Prerequisites: LS 100, E 105. An introduction to legal research and writing. Students will learn to find and use primary and secondary legal authority in the law library and computerized legal research databases to solve legal research problems and assignments. Further study of legal reasoning and case and statutory analysis. 3 credit hours.

LS 241 Legal Research and Writing II
Prerequisites: LS 240, E 110. Through more advanced assignments, students further develop legal research, analytic, and writing skills. Includes research and analysis of realistic legal problems with preparation of opinion letters, legal memoranda, and briefs. 3 credit hours.

LS 244 Estates and Trusts
An examination of the legal principles and techniques of effective estate planning and administration. Topics covered include inheritance statutes, preparation and execution of wills, and record keeping practices. 3 credit hours.

LS 301 Administrative Law and Regulation
Study of the basic principles of law for government agencies, structure of federal and Connecticut agencies, and major laws governing these agencies, including the state and federal Administrative Procedure Acts and Freedom of Information Acts.

Overview of the role of legal professionals in administrative practice with practical applications. 3 credits hours.

LS 326 Real Estate Law
A variety of legal skills in real estate law. Special attention given to title, operations, mortgages, deeds, leases, property taxes, closing procedures and documents. 3 credit hours.

LS 328 Management and Administrative Skills
An examination of the procedures and systems necessary to run a law office efficiently. Students will learn such administrative skills as how to interview clients, conduct legal correspondence, and maintain legal records. Proven management techniques for keeping track of filing dates and fees, court dockets, and calendars are also examined. 3 credit hours.

LS 330 Legal Investigation
Examines skills needed to conduct investigations that are a routine part of the practice of law, such as principles of fact-gathering in a wide range of cases (e.g., criminal, divorce, custody, housing). 3 credit hours.

LS 401 Alternative Dispute Resolution: Models and Practice
Study of current models of conflict resolution, emphasizing mediation and restorative justice; applications in legal and organizational settings. Using simulations, students will learn basic negotiation and mediation skills. 3 credit hours.

LS 405 Environmental Law
Study of environmental law and regulation at the federal, state, and local levels. Includes review of major federal environmental protection laws, state common law protections, local land use controls, and international law. Role of regulatory agencies and the courts examined. 3 credit hours.

LS 410 Counterterrorism and the Law
This course will study the Patriot Act, FISA, and other counter-terrorism laws, the balance between security and protecting constitutional rights, including personal liberty, and how the courts are deciding these cases. Historical context and public policy as well as legal issues will be considered. 3 credit hours.

LS 430 Computers and the Law
Analysis of special problems arising from use of computers and the Internet. Exploration of topics such as the impact of mass data banks on the right to privacy, copyright infringement, personal and social security concerns, and the tension between the First Amendment and protecting vulnerable populations. 3 credit hours.

LS 450-454 Special Topics
Prerequisite: consent of department chair. A study of selected issues of particular interest to the student and the instructor. 3 credit hours.

LS 498 Research Project
Prerequisites: senior standing and consent of department chair. The student carries out an original research project in a legal setting and reports findings. 1-6 credit hours.

LS 500 Pre-Internship
Prerequisite: junior standing in Legal Studies. This course is designed to enable students to understand and prepare for the internship experience. Students will explore internship and legal career opportunities, develop job application skills, review professional office procedures and ethical responsibilities, and select potential internship placements in each student's area of interest. Students are required to complete this course prior to enrolling in LS 501/502. 1 credit hour.

LS 501/502 Legal Studies Internship I and II
Prerequisites: senior standing and completion of common courses for the major. Pre-placement classroom review of professional office procedures, including maintaining applicable legal records and files, responsibilities in handling oral and written communications, ethical responsibilities, and time and workflow management; followed by internship placement. Regular class discussion sessions for analysis, problem solving, and skill building during the internship placement. 4 credit hours each semester.

LS 599 Independent Study
Prerequisite: consent of department chair. An opportunity for the student, under the direction of a faculty member, to explore and acquire competence in a special area of interest. 1-3 credit hours.

MATHEMATICS

All prerequisites for the following mathematics courses must be strictly observed unless waived with permission of the mathematics department. Students who have successfully com-

pleted any mathematics course may not enroll in any course prerequisite to the completed course without explicit permission of the department.

M 103 Fundamental Mathematics
Required at the inception of the program of study of all students (day and evening) who do not show sufficient competency with fundamental arithmetic and algebra, as determined by placement examination. Arithmetic operations, algebraic expressions, linear equations in one variable, exponents and polynomials, Cartesian coordinates, equation of a straight line, and simultaneous linear equations. (Students placed in M 103 must successfully complete this course before taking any other course having mathematical content.) Students who take M 103 will have the total number of credits required for graduation increased by 3. 3 credit hours (4 to 6 meeting hours per week).

M 109 Intermediate Algebra
Prerequisite: a grade of C or higher in M 103 or placement by the department. A review of the fundamental operations and an extensive study of functions, exponents, radicals, linear and quadratic equations. Additional topics include ratio, proportion, variation, progression, and the binomial theorem. This course is intended primarily for students whose program of study requires calculus. Other students, see M 127. 3 credit hours.

M 115 Pre-Calculus
Prerequisite: a grade of C or higher in M 109 or placement by the department. Offers the foundation needed for the study of calculus. Polynomials, algebraic functions, elementary point geometry, plane analytic trigonometry, and properties of exponential functions. 4 credit hours.

M 117 Calculus I
Prerequisite: a grade of C or higher in M 115 or placement by the department. The first-year college course for majors in mathematics, science, and engineering; the basic prerequisite for all advanced mathematics. Introduces differential and integral calculus for functions of one variable, including algebraic and transcendental functions. Includes basic rules and properties of limits and derivatives and applications of derivatives. Studies the plane analytic geometry needed for calculus. 4 credit hours.

M 118 Calculus II
Prerequisite: a grade of C or higher in M 117. Continuation of first-year calculus, including fundamental theorem of calculus, methods of integration, applications of the integral, improper integrals, infinite series, and polar coordinates. 4 credit hours.

M 121 Algebraic Structures
A first course in an orientation to abstract mathematics: elementary logic, sets, mappings, relations, operations, elementary group theory. Open to all freshmen and sophomores. 3 credit hours.

M 127 Finite Mathematics
Prerequisite: M 103 or placement by the department. Functions and lines, linear systems, linear programming, mathematics of finance, sets and counting, and an introduction to probability. Numerous applications and an introduction to computing and computers. *This course is intended primarily for students whose program of study does* ***not*** *require calculus. Students preparing to take calculus, see M 109.* 3 credit hours.

M 166 Discrete Mathematics for Computer Science
Prerequisite: CS 110. A foundation course for computer science majors. Introduction to fundamentals, including logic, sets, functions, and induction. Emphasis on the internal computer representations and computational properties of numbers. 3 credit hours. (This course is cross-listed with CS 166 Discrete Mathematics for Computing.)

M 203 Calculus III
Prerequisite: a grade of C or higher in M 118. The calculus of multiple variables, covering three-dimensional topics in analysis, and vector analysis, partial differentiation, maxima and minima for functions of several variables, line integrals, multiple integrals, spherical and cylindrical polar coordinates. 4 credit hours.

M 204 Differential Equations
Prerequisite: M 203. The solution of ordinary differential equations, including the use of Laplace transforms. Existence of solutions, series solutions, matrix methods, nonlinear equations, and varied applications. 3 credit hours.

M 227 Mathematics for Elementary Education Teachers
Prerequisites: M 109 or M 127 or

placement by the department. From the point of view of a teacher this is a review of the mathematics topics covered in elementary school, and it covers the mathematical underpinnings of such topics as whole numbers, fractions, number theory, geometry, and measurement. Problem solving will be an underlying theme to the course. 3 credit hours.

M 228 Elementary Statistics
Prerequisite: M 127. A non-calculus-based course which includes basic probability theory, random variables and their distributions, estimation and hypothesis testing, regression and correlation. Emphasis on an applied approach to statistical theory with applications chosen from many different fields of study. Students will be introduced to and make use of the computer package SPSS for data analysis. Not open to students who have completed calculus unless permission received from the mathematics department. 4 credit hours. (This course is cross-listed with P 301 Statistics for the Behavioral Sciences.)

M 301 Geometry from a Modern Viewpoint
Prerequisite: M 117. A modern approach to Euclidean geometry with emphasis on proofs; basic results on lines, planes, angles, polygons, circles, spheres; coordinate and vector viewpoints. 3 credit hours.

M 303 Advanced Calculus
Prerequisite: M 204. A survey course in applied mathematics. Vector calculus: line and surface integrals, integral theorems of Green and Stokes, and the divergence theorem. Complex variables: elementary functions, Cauchy-Riemann equations, integration, Cauchy integral theorem, infinite series, calculus of residues and conformal mapping. 3 credit hours.

M 305 Discrete Structures
Prerequisite: M 118. Corequisite: M 203. Methods of proof, the integers, induction, prime numbers, recursive algorithms, greatest common divisors, the Euclidean algorithm, the fundamental theorem of arithmetic, congruences. 3 credit hours.

M 308 Introduction to Real Analysis
Prerequisite: M 204. Sets and functions, the real numbers, topology of the line, limits, continuity, completeness, compactness, connectedness, sequences and series, the derivative, the Riemann integral, the fundamental theorem of calculus, sequences and series of functions. 3 credit hours.

M 309 Advanced Differential Equations
Prerequisite: M 204. Theoretical analysis and applications of non-linear differential equations. Phase plane and space, perturbation theory and techniques, series and related methods, stability theory and techniques, and relaxation phenomena. 3 credit hours.

M 311 Linear Algebra
Prerequisite: M 203. Matrices, systems of linear equations and their solutions, linear vector spaces, linear transformations, eigenvalues and eigenvectors. Applications. 3 credit hours.

M 321 Modern Algebra
Prerequisite: M 305 or M 311. Groups, rings, integral domains, fields, polynomials. 3 credit hours.

M 325 Number Theory
Prerequisite: M 305. Topics are selected from the following: mathematical induction, Euclidean algorithm, integers, number theoretic functions, Euler-Fermat theorems, congruences, quadratic residues, and Peano axioms. 3 credit hours.

M 331 Combinatorics
Prerequisite: M 311 or permission of the department. Problem solving using graph theory and combinatorical methods. Topics include counting methods, recurrence, generating functions, enumeration, graphs, trees, coloring problems, network flows and matchings. Special emphasis on reasoning which underlies combinatorical problem solving, algorithm development, and logical structure of programs. 3 credit hours.

M 338 Numerical Analysis
Prerequisites: M 203 and a standard programming language. Topics include solutions of algebraic and transcendental equations by iterative methods; system of linear equations (matrix inversion, etc.); interpolation, numerical differentiation, and integration; solution of ordinary differential equations. Scientific and engineering applications. 3 credit hours.

M 361 Mathematical Modeling
Prerequisites: at least junior status and M 311. Problem solving through mathematical model building. Emphasis on applications of mathematics to the social, life, and managerial sciences. Topics are selected from probability, graph the-

ory, Markov processes, linear programming, optimization, game theory, simulation. 3 credit hours.

M 371 Probability and Statistics I
Prerequisite: M 203. Axiomatic study of probability: sample spaces, combinatorical analysis, independence and dependence, random variables, distribution functions, moment generating functions, central limit theorem. 3 credit hours.

M 381 Real Analysis
Prerequisite: M 308. Foundation of analysis, sets and functions, real and complex number systems; limits, convergence and continuity, sequences and infinite series, differentiation. 3 credit hours.

M 403 Techniques in Applied Mathematics
Prerequisite: M 204. Techniques in applied analysis including Fourier series; orthogonal functions such as Bessel functions, Legendre polynomials, Chebychev polynomials, Laplace and Fourier transforms; product solutions of partial differential equations and boundary value problems. 3 credit hours.

M 423 Complex Variables
Prerequisite: M 204. For mathematics, science, and engineering students. Review of elementary functions and Euler forms; holomorphic functions, Laurent series, singularities, calculus of residues, contour integration, maximum modulus theorem, bilinear and inverse transformation, conformal mapping, and analytic continuation. 3 credit hours.

M 441 Topology
Prerequisite: M 381 or permission of department chair. Topics selected from the following: Hausdorff neighborhood relations: derived, open, and closed sets; closure; topological space; bases; homeomorphisms; relative topology; product spaces; separation axioms; metric spaces; connectedness and compactness. 3 credit hours.

M 450-453 Special Topics in Mathematics
Selected topics in mathematics of special or current interest. 3 credit hours.

M 472 Probability and Statistics II
Prerequisite: M 371. Elements of the theory of point estimation, maximum likelihood estimates, theory of testing hypotheses, power of a test, confidence intervals, linear regression, experimental design and analysis of variance, correlation, and nonparametric tests. 3 credit hours.

M 473 Advanced Statistical Inference
Prerequisite: M 472. This course is designed to provide an in-depth treatment of statistical inference. Topics include distribution of functions of one or several random variables, N-P structure of tests of hypothesis, properties of "good" estimators, and the multivariate normal distribution. 3 credit hours.

M 481 Linear Models I
Prerequisite: M 472. This course is designed to provide a comprehensive study of linear regression. Topics include simple linear regression, inference in simple linear regression, violations of model assumptions, multiple linear regression, and the Extra Sum of Squares Principle. 3 credit hours.

M 482 Linear Models II
Prerequisite: M 481. Continuation of M 481, with an emphasis on experimental design. Topics include single-factor designs, two-factor designs, multiple-factor designs, and randomized block designs. 3 credit hours.

M 491-499 Department Seminar
A study of a mathematical topic or topics not covered in the above courses. Subject of study will be announced by the mathematics department in advance. A paper and/or seminar talk, suitable for presentation to all interested mathematics faculty, will be required. 3 credit hours.

M 599 Independent Study
Prerequisites: consent of faculty member and department chair. Opportunity for the student, under the direction of a faculty member, to explore an area of interest. This course must be initiated by the student. 1-3 credit hours.

MECHANICAL ENGINEERING

Design elective/required choices are indicated by (D) following course title.

ME 200 Engineering Materials
Prerequisite: CH 103. A study of the properties of the principal engineering materials of modern technology: steels and nonferrous alloys and their heat treatment, concrete, wood,

ceramics, and plastics. Gives engineers sufficient background to aid them in selecting materials and setting specifications. 3 credit hours.

ME 201 Engineering Graphics
Prerequisites: EAS 107, EAS 109. Corequisite: M 118. Orthographic/ Multiview projections. Isometric, auxiliary, and sectional views. Dimensioning and tolerancing practices. Working drawings. Computer-aided drafting and solid modeling using contemporary software (e.g., AutoCAD, SolidWorks). 2 credit hours.

ME 204 Dynamics
Prerequisites: M 118, PH 150. Free-body diagrams, equilibrium of forces, friction. Kinematics and dynamics of particles and rigid bodies with emphasis on two-dimensional problems. Vector representation of motion in rectangular, polar, and natural coordinates. Impulse-momentum and work-energy theorems. Rigid bodies in translation, rotation and general plane motion. 3 credit hours.

ME 215 Instrumentation Laboratory
Prerequisites: CE 205, E 225 (may be taken concurrently), ME Skills Workshop. Laboratory experiments introducing equipment and techniques used to measure force, static displacement, dynamic motion, stress, strain, fluid flow, pressure, and temperature. Introduction to statistical methods, data acquisition, data analysis and control using microcomputers. 2 credit hours.

ME 222 Methods of Mechanical Design (D)
Prerequisites: CE 205, ME 101. Introduction to the mechanical design process including planning, phases of design, methods, and documentation. Understanding the design problem, planning a project, concept generation and evaluation, design matrix and Pugh's method. Product design and generation, manufacturing processes, cost estimation, concurrent design. Product evaluation. Implementation of methods via hardware design project. 3 credit hours.

ME 300 Rigid Body Dynamics
Prerequisite: EAS 222. Planar and 3-D kinematics and kinetics of rigid bodies. Work-energy methods impulse-momentum theorem. Inertia tensor, Euler angles, and gyroscopic motion. 3 credit hours.

ME 301 Thermodynamics I
Prerequisites: M 118, PH 150. Classical thermodynamics treatment of first and second laws. Thermal and caloric equations of state. Closed and open systems and steady flow processes. Absolute temperature, entropy, combined first and second laws. Power and refrigeration cycles. 3 credit hours.

ME 302 Thermodynamics II
Prerequisites: CS 110, M 203 (may be taken concurrently), ME 301. Extensions and applications of first and second laws; availability, combustion process, ideal gas mixtures. Maxwell's relations. HVAC topics. Advanced thermodynamic cycles. 3 credit hours.

ME 304 Mechanical Behavior of Materials
Prerequisite: ME 200. Detailed study of elastic and plastic deformation of materials at room temperature and elevated temperatures. Dislocation theory and microplasticity models considered. 3 credit hours.

ME 305 Engineering Thermodynamics
Prerequisites: EAS 224, M 203. Use of first and second Laws of Thermodynamics to investigate processes involving vapors and gases in closed and open systems. Analysis of vapor and gas power and refrigeration cycles. Exergy analysis. Psychometrics. Combustion processes. 4 credit hours.

ME 307 Solid Mechanics
Prerequisites: CE 205, M 203. Elastic behavior of structural elements such as beams, columns, and shafts. Stress and strain at a point. Plane stress and plane strain. Stress and strain transformations, Mohr's circle. Theories of yielding and failure. Introduction to the finite element method of stress analysis and computer-aided engineering. 3 credit hours.

ME 308 Applied Elasticity
Prerequisites: EAS 222, M 203. Stress and strain tensors. Equilibrium equations. Transformation equations for stress and strain. Principal stresses and maximum shear stress. Stress-strain relations. Measurement of strain. Theories of yielding and fracture. Introduction to matrix methods of structural analysis, the finite element method, and computer-aided engineering. 4 credit hours.

ME 315 Mechanics Laboratory
Prerequisites: CE 205, ME 204, ME 215. Laboratory experiments in mechanics of materials, vibrational analysis, computer-aided data acquisition and analysis. Emphasis placed on measurement techniques, report writing, and error/statistical analysis. 2 credit hours.

ME 321 Incompressible Fluid Flow
Prerequisites: M 204, ME 204. Fluid kinematics, continuity equation, vector operations. Momentum equation for frictionless flow, Bernoulli equation with applications. Irrotational flow, velocity potential, Laplace's equation, dynamic pressure and lift. Stream function for incompressible flows. Rotational flows, vorticity, circulation, lift and drag. Integral momentum analysis. Navier-Stokes equation, stress tensor. Newtonian fluid. Boundary layer approximations. 3 credit hours.

ME 330 Fundamentals of Mechanical Design (D)
Prerequisite: CE 205. Review of methods of mechanical design. Development of fundamental engineering analysis involving static and fatigue failure. Topics include the maximum shear and Von Mises' theories of static design, safety factor, Soderberg and Goodman diagrams for fatigue design, modified endurance limit, reliability analysis, statistical considerations, and stress concentration. Introduction to codes and standards. Practical applications. 3 credit hours.

ME 343 Mechanisms (D)
Prerequisite: ME 204. Graphic and analytic methods for determining displacements, velocities, and accelerations of machine components. Applications to simple mechanisms such as linkages, cams, gears. Design project. 3 credit hours.

ME 344 Mechanics of Vibration
Prerequisites: M 204, ME 204. The mathematical relationships necessary for the solution of problems involving the vibration of lumped and continuous systems. Damping, free and forced motions, resonance, isolation, energy methods, balancing. Single, two, and multiple degrees of freedom. Vibration measurement. 3 credit hours.

ME 355 Interfacing and Control of Mechanical Devices (D)
Prerequisites: CS 110, EE 212 or consent of instructor. A practical, hands-on approach to connecting, monitoring, and control of thermo sensors, motors, encoders, and other sensors and transducers using a PC and a multipurpose expansion board. Topics include hardware connections, voltage input and output, motor-generator and motor-encoder feedback, stepper motors, thermal control, and digital switching. 3 credit hours.

ME 404 Heat and Mass Transfer
Prerequisites: M 204, ME 302. Corequisite: ME 321. Conduction in solids, solution of multidimensional conduction problems, unsteady conduction, radiation, boundary layer and convection. Introduction to mass transfer. Lectures include occasional demonstrations of convection, radiation, heat exchangers. 3 credit hours.

ME 407 Solar Energy Thermal Processes (D)
Corequisite: ME 404. Introduction to the fundamentals of solar energy thermal processes including solar radiation, flat plate and focusing collectors, energy storage, hot water heating, cooling and auxiliary system components. Emphasis on the design and evaluation of systems as they pertain to commercial and residential buildings. 3 credit hours.

ME 408 Advanced Mechanics
Prerequisites: M 204, ME 204. Plane and spatial motion of particles and rigid bodies, inertia tensor, relative motion, gyroscopes, central force motion. Lagrangian and Hamiltonian methods. 3 credit hours.

ME 411 Fundamentals of Thermo/Fluid Design (D)
Corequisites: ME 302, ME 330. Introduction to the design of specific thermal, heat, and fluid devices and systems as they apply to practical design problems. Review of design methodology and basic equations in thermal sciences. Group design studies in each of the three basic areas of heat exchangers, prime movers, and piping systems. 3 credit hours.

ME 415 Thermo/Fluids Laboratory
Prerequisites: ME 215, ME 321. Corequisite: ME 404. A survey of experiments and laboratory investigations covering the areas of fluid mechanics, thermodynamics, heat transfer, and gas dynamics. Analog and digital data acquisition and analysis. 2 credit hours.

ME 422 Compressible Fluid Flow
Prerequisites: ME 302, ME 321, ME 404. Compressible fluid flow with emphasis on one-dimensional ducted steady flows with heat transfer, frictional effects, shock waves, and combined effects. Introductory considerations of two- and three-dimensional flows. Applications to propulsive devices. Occasional demonstrations accompany the lectures. 3 credit hours.

ME 426 Turbomachinery (D)
Prerequisites: ME 302, ME 321. Review of basic thermodynamics and fluid mechanics. Dimensional analysis. Specific speed. Classification of turbomachines. Cavitation. Losses. Definitions of efficiency. Theories of turbomachines. Design considerations for stator blades and rotor blades. Computer-aided design. 3 credit hours.

ME 427 Computer-Aided Engineering (D)
Prerequisite: ME 307. Integration of computers into the design cycle. Interactive computer modeling and analysis. Geometrical modeling with wire frame, surface, and solid models. Finite element modeling and analysis. Problems solved involving structural, dynamic, and thermal characteristics of mechanical devices. 3 credit hours.

ME 431 Mechanical Engineering Design I (D)
Prerequisites: ME 330 and senior status or instructor's consent. Basic aspects of power transmission. Topics include friction train, belt and chain drives, gear drive, planetary and differential trains. Study of air and hydraulic components and analysis of machine elements including shafts, springs, clutches, bearings, gears. In-house and industrial projects in solids and thermal/fluids areas. Student groups determine problem requirements and objectives and decide on the best design alternatives. Oral project presentations. Course available only in fall semester. 3 credit hours.

ME 432 Mechanical Engineering Design II (D)
Prerequisite: ME 431. Projects initiated in ME 431 are carried to completion by the same groups. Detailed design drawings and prototype construction, testing, and evaluation. Midterm and final oral presentations and comprehensive written reports. Course available only in spring semester. 3 credit hours.

ME 435 Advanced Mechanical Design (D)
Prerequisites: ME 321, ME 431. Selected advanced topics related to the design of machine elements such as hydrodynamic theory of lubrication and principles of hydraulic machines with application to hydraulic couplings. 3 credit hours.

ME 438 Systems Dynamics and Control
Prerequisite: ME 321. Modeling, analysis, and design of dynamic systems with feedback. Response and stability analysis. Methods include Routh-Hurwitz, root locus, Bode plots, Nyquist stability criterion. Design and compensation methods. Applications in mechanical, thermal, electrical systems. Project. 3 credit hours.

ME 443 Introduction to Flight Propulsion
Prerequisite: ME 422 or consent of instructor. A senior course designed for those students who intend to work or pursue further studies in the aerospace field. Among the topics covered are detonation and deflagration, introductory one-dimensional nonsteady gas flows, basic concepts of turbomachinery, and survey of contemporary propulsive devices. Shock tube, supersonic wind tunnel, and flame propagation demonstrations accompany the lectures. 3 credit hours.

ME 450 Special Topics in Mechanical Engineering
Prerequisite: consent of instructor. In-depth study of topics chosen from areas of particular and current interest to mechanical engineering students. 1-6 credit hours.

ME 512 Senior Seminar
Open to seniors with coordinator's approval. Individual oral presentations by students of material researched on topics selected by students and faculty at the beginning of the term. 3 credit hours.

ME 599 Independent Study (D)
Prerequisites: consent of faculty supervisor and approval of program coordinator. Independent study provides an opportunity for the student to explore an area of special interest under faculty supervision. 1-3 credit hours per semester, with a maximum of 12.

MANAGEMENT

MG 115 Fundamentals of Management
A course in introductory management that explores the basics of both theory and practice. Topics include

and are related to the five functions of management: planning, organizing, staffing, leading, and controlling. *Enrollment limited to nonbusiness majors and/or AS Business Administration students only.* 3 credit hours.

MG 120 Development of American Sports
A survey of the American sports industry and how it relates to society: issues and problems in national and international sport activities. An analysis of current sports issues and trends. 3 credit hours.

MG 210 Management and Organization
Prerequisite: sophomore standing. A study of management systems as they apply to all organizations. Managerial functions, principles of management, and other aspects of the management process are examined. 3 credit hours.

MG 230 Management of Sports Industries
Prerequisites: MG 120 and sophomore standing. A survey of the principles of management applicable to the administration of aspects of sports enterprises: planning, controlling, organizing, staffing, and directing of the various activities necessary for effective functioning. 3 credit hours.

MG 235 Marketing and Public Relations in Sports
Prerequisites: MG 120 and sophomore standing. This course introduces students to marketing and public relations skills crucial to success in every sport business and examines the unique features of sport marketing and public relations that set sport apart from other industries. Students develop a strategic sports marketing plan that includes an emphasis on public relations. 3 credit hours.

MG 240 Business Ethics and Diversity
Prerequisite: sophomore standing. This course introduces the student to the complexities of ethical behavior within the business environment and examines the impact of different demographic groups on various types of organizations. 3 credit hours.

MG 317 Entrepreneurship and New Business Development
Prerequisite: MG 210. Covers the entrepreneurial process from conception to operation of a new business. Concentrates on the characteristics of entrepreneurs and the process by which they turn ideas into new business. Students will also learn about the process of new business development in the large corporation and study the effect of corporate culture on the success of new ventures. 3 credit hours.

MG 320 Sports Industries and the Law
Prerequisite: MG 120. Legal aspects as they relate to professional and amateur sport institutions. An analysis of legal problems and issues confronting the sports manager: suits against the organizational structure, safety, collective bargaining and arbitration, and antitrust violations. 3 credit hours.

MG 325 Sports Facility Management
Prerequisites: MG 120, MG 210. An examination of how sports facilities like coliseums, municipal and college stadiums, and multi-purpose civic centers are managed. Among the topics included are financial management of sports facilities, booking and scheduling events, box office management, staging and event production, personnel management, concessions and merchandising management. 3 credit hours.

MG 327 Business Planning
Prerequisite: MG 317. Covers the elements of planning for a new business. Identifies the goals, objectives and strategies that an entrepreneur must articulate for the fulfillment of that entrepreneurial dream. The main focus of the course is to highlight the milestones toward the success of the new venture. 3 credit hours.

MG 331 Management of Human Resources
Prerequisite: MG 210. A survey of the industrial relations and the personnel management system of an organization. Manpower planning/forecasting, labor markets, selection and placement, training and development, compensation, government/employer and labor/management relations. 3 credit hours.

MG 350 Management of Workforce Diversity
Prerequisite: MG 210. This course explores issues of social identity, social and cultural diversity, and societal manifestations of oppression as they relate to the workplace. Workforce demographics are rapidly evolving due to changes in birthrates, immigration, legal systems, social attitudes, and economic expansion. Managing businesses and other organizations will require not

just contemporary knowledge and technology but the expertise to manage increasing workforce diversity. 3 credit hours.

MG 415 Multinational Management
Prerequisite: MG 210. An analysis and examination of management and organizational behavior against a background of diversified cultural systems. 3 credit hours.

MG 417 Managing an Entrepreneurial Venture
Prerequisites: FI 213, MG 317. Covers the principles of managing a growing entrepreneurial business. Students will learn how to anticipate and deal with problems peculiar to a growing business. The emphasis will be on innovation, creativity, and managing opportunities, in contrast to management of ongoing business that is based on efficiency and effectiveness. 3 credit hours.

MG 430 Financial Management for Sports Administration
Prerequisites: FI 213, MG 210. Methods and procedures as they apply to sports administration, taxation, purchasing, cost analysis, budgeting, and the financial problems of dealing with mass media. 3 credit hours.

MG 450-454 Special Topics in Business
Prerequisites: MG 210; junior standing required unless otherwise specified in course schedule description. Special studies in business and public administration. Work may include study and analysis of specific problems within units of business or government and application of theory to those problems, programs of research related to a student's discipline, or special projects. Several sessions may run concurrently. 3 credit hours.

MG 457 Family Business Management
Prerequisite: MG 210. Provides a fundamental understanding of family business management, including historical and theoretical rudiments; transition stages, conflict resolution; family systems; and succession. Case studies of classic family businesses will be used for discussion and analysis. 3 credit hours.

MG 467 Franchising
Prerequisites: FI 213, MG 210. Covers the franchising operation from both the franchiser's and franchisee's perspectives. Provides the student the framework to evaluate the feasibility of extending a new business into a franchise and the potential profitability of engaging in a franchise operation. 3 credit hours.

MG 475 Sport Event Management
Prerequisite: MG 120, junior standing. This course will help students develop the skills necessary to manage virtually any aspect of a sporting event, including contingency planning, logistics, working with vendors, financing, ticketing and admissions, seating design and controls, sponsor and supplier agreements, risk management and insurance, marketing events and licensed merchandise, finding sponsorship, working with governmental agencies, and scheduling tournaments and matches. Focus on events ranging from cycling and running races to the Super Bowl and the World Series. A requirement will be that students be directly involved with organizing a sports event during the semester. 3 credit hours.

MG 512 Contemporary Issues in Business and Society
Prerequisites: MG 210 and senior standing. A rigorous examination of competing concepts of the role of business in society. A capstone, integrative course relating the firm to its environment, including issues arising from aggregate social, political, legal, and economic factors. 3 credit hours.

MG 520 Current Issues in Human Resource Management
Prerequisites: MG 210, MG 331. Examines research findings and current literature relevant to issues affecting personnel functions in the organization. 3 credit hours.

MG 550 Business Policy
Prerequisites: FI 213, MG 210, MK 300. An examination of organizational policies from the viewpoint of top-level executives; development of analytic frameworks for achieving the goals of the total organization. Discussion of cases and development of oral and written skills. 3 credit hours.

MG 597 Practicum
Prerequisite: junior standing. A course of study designed especially for the supervised practical application of previously studied theory in a group setting. Done under the supervision of a faculty sponsor and coordinated with a business organization. 3 credit hours.

MG 598 Internship
Prerequisite: MG 320 or MG 210. On-the-job experience in selected

organizations in management. 3 credit hours.

MG 599 Independent Study
Prerequisite: MG 210. Independent study on a project of interest to the student under the direction of a faculty member designated by the department chair. 3 credit hours.

MARKETING

MK 200 Principles of Marketing
Prerequisite: sophomore standing. The fundamental functions of marketing involving the flow of goods and services from producers to consumers. Marketing methods of promotion, pricing, product decisions, and distribution channels. 3 credit hours.

MK 205 Consumer Behavior
Prerequisite: sophomore standing. A study of the principal comprehensive marketing models which focus on buyer decision processes. Topics include brand switching decisions, measures of media effectiveness, market segmentation, and other marketing techniques. 3 credit hours.

MK 302 Organizational Marketing
Prerequisite: MK 200. Practices and policies in the distribution of industrial goods, including purchasing, market analysis, channels of distribution, pricing, competitive practices, and operating costs. 3 credit hours.

MK 307 Advertising and Promotion
Prerequisite: MK 200. The design, management, and evaluation of the various communications programs involved in marketing and public relations. 3 credit hours.

MK 316 Sales Management
Prerequisite: MK 200. The management of a sales organization. Recruiting, selecting, training, supervision, motivation, and compensation of sales personnel. 3 credit hours.

MK 321 Retail Management
Prerequisite: MK 200. Survey of the problems and opportunities in the retail distribution field, including a basic understanding of buying, selling, and promotion of the retail consumer market. 3 credit hours.

MK 326 Overview of E-Commerce
Prerequisites: MK 200 and junior standing. A review of issues in e-commerce. Technologies available for digitalization and transmission are surveyed. Different uses of internets, intranets, extranets, and web pages are discussed. B2B sales and supply chain management are introduced. Available security and payment systems are compared. The impacts of e-commerce and e-tail on business structure, channel conflicts, and alliances are introduced. 3 credit hours.

MK 402 Marketing of Services
Prerequisite: MK 200. The marketing of services, including services-based market planning, marketing mix, core marketing strategies and trends, and the essential differences between product and services-based marketing. 3 credit hours.

MK 413 International Marketing
Prerequisites: EC 133, MK 200. Applied marketing decision making in international firms. The development of marketing strategy and techniques in foreign markets. Study of key multinational marketing skills, especially research, product policy, pricing, promotion, and distribution. 3 credit hours.

MK 442 Marketing Research in the Global Environment
Prerequisites: MK 200, QA 216. Research as a component of the marketing information system. Research design, sampling methods, data interpretation, and management of the marketing research function. 3 credit hours.

MK 450-454 Special Topics
Prerequisites: MK 200 and junior standing. Coverage of new and emerging topics and applications in marketing theory and practice. The format may include both traditional classroom activities and innovative group projects. 3 credit hours.

MK 515 Marketing Management
Prerequisites: MK 200 and senior standing. The analysis, planning, and control of the marketing effort within the firm. Emphasis on case analysis. A marketing capstone course. 3 credit hours.

MK 597 Practicum
Prerequisite: MK 200 and senior standing. A course of study designed especially for the supervised practical application of previously studied theory in a group setting. Done under the supervision of a faculty sponsor and coordinated with a business organization. 3 credit hours.

MK 598 Marketing Internship
Prerequisite: MK 200. Supervised field experience for qualified students in areas related to their major. 3 credit hours.

MK 599 Independent Study
Prerequisite: MK 200. A planned program of individual study under the supervision of a member of the faculty. 3 credit hours.

MULTIMEDIA

MM 301 Introduction to Multimedia
Prerequisite: introductory computer course (core curriculum requirement). The three goals of this course are (1) to provide students with the necessary multimedia background and theory; (2) to discuss the basic building blocks of multimedia—text, images, animation, video, and sound; and (3) to teach the practical elements of making multimedia and the use of authoring software. 3 credit hours.

MM 311 Advanced Multimedia
Prerequisite: MM 301. This course will first deal with the advanced elements of multimedia. Hardware and software tools will be described in detail. Students will then be introduced to the step-by-step creative and organizing process that results in a finished multimedia project: the technology, user interface design, and graphic production techniques. The course will emphasize such topics as how to structure information, how to anticipate user experience, and how to generate visually compelling interfaces. 3 credit hours.

MM 312 Website Creation
Prerequisite: MM 301 or permission of instructor. An introduction to webpage creation and design. This course will address some of the most important topics for web- site designers: site evaluation and design, content, structure, layout, and audience. 3 credit hours.

MM 401 Multimedia Seminar
Prerequisite: MM 311. This course will cover more advanced elements of multimedia. Current technical advances and artistic trends will be discussed in detail. Students will be reintroduced to the creative and organizing process that results in a finished multimedia project, and they will become familiarized with some of the software tools (HTML editors) used to design and implement an interactive webpage. 3 credit hours.

MM 450 Special Topics in Multimedia
Study of selected topics of special or current interest. 3 credit hours.

MARINE BIOLOGY

MR 101 Introduction to Marine Biology
An introduction to the field of marine biology and the marine environments of southern Connecticut. Students will learn basic marine sampling techniques and basic organism identification. Students will also explore the different components of the marine environment, in particular Long Island Sound. This course is intended for marine biology majors and other students interested in learning about the field. Students are required to have hip waders. 1 credit hour.

MR 102 Seminar in Marine Biology
An introduction to careers and research topics in marine biology. Every week students will explore new scientific questions in marine biology and learn about potential occupations within the field. This course is intended for marine biology majors and other students interested in learning about ongoing issues in the field of marine biology. 2 credit hours.

MR 200 Oceanography with Laboratory
Prerequisites: BI 121-122 or BI 253-254, Math 109 or higher, and high school chemistry. This course investigates the major aspects of physical, geological, chemical, and biological oceanography. Human impacts on the ocean environment are considered as well. The laboratory component provides hands-on experience with marine sampling, mapping, and measurements, as well as with computer simulations of ocean currents, tides, waves, and other oceanographic phenomena. 4 credit hours.

MR 260 Marine Vertebrate Zoology with Laboratory
Prerequisite: BI 122 or BI 254. A survey of marine vertebrate phyla, focusing on taxonomy, evolutionary relationships, structure and function, physiological adaptations, and life modes. Laboratory includes real and virtual examination of the structure and anatomy of representative taxa from the phyla, laboratory experiments, and observations on

the behavioral responses of certain organisms to environmental stimuli. 4 credit hours.

MR 300 Marine Ecology with Laboratory
Prerequisites: BI 250, BI 320. Investigation of ecological structure and dynamics in marine and estuarine habitats at organismal, population, community, and ecosystem levels. Geographic aspects and human interactions with marine ecosystems are also considered. Designed around specific topics covered in lecture, the laboratory includes investigation of different types of estuarine and coastal habitats, field and laboratory techniques, and design of basic and applied marine ecological investigations. Some required weekend field classes. Laboratory fee; 4 credit hours.

MR 310 Marine Botany with Laboratory
Prerequisites: BI 122 or BI 254; MR 200. A survey of plant and algae taxa inhabiting the marine and estuarine environment. Emphasis will be placed on the form and function of the major groups and their adaptation to the marine environment. The laboratory section will include exercises in lower plant taxonomy and morphology. Experiments in plant physiology and field trips to study intertidal plant communities will be included. Laboratory fee; 4 credit hours.

MR 320 Marine Pollution
Prerequisite: MR 300. A classification of the different forms of pollution in the marine environment. The fate and transport of different pollutants will be discussed as will the effects of pollutants on coastal and open marine ecosystems. 3 credit hours.

MR 330 Coastal Resources and Management
Prerequisite: MR 300. Examination of natural coastal resources, human uses and alterations, federal and international regulations shaping activities in the coastal zone, and coastal management at the international, federal, state, and local levels. Some weekend field classes may be required. 3 credit hours.

MR 331 Marine Conservation and Restoration
Prerequisite: MR 300. An investigation into the conservation of marine resources and the science of habitat recovery and restoration. Topics will include fisheries conservation, case studies of restored coastal habitats, assessment procedures, and evaluation of ecological function in restored habitats. 3 credit hours.

MR 410 Marine Aquaculture and Biotechnology
Prerequisite: MR 300. An examination of marine aquaculture and the use of marine resources in developing biotechnological products. The history of aquaculture and current aquaculture practices throughout the world are reviewed. Lectures are augmented by visits to commercial establishments and aquaculture research laboratories. The second portion of the course will focus on the development of marine biotechnology, marine products, and the relationship between aquaculture and marine biotechnology. Some required weekend field classes. 3 credit hours.

MR 420 Marine Biogeochemistry with Laboratory
Prerequisites: CH 115-118, MR 300. A comprehensive study of the biogeochemistry of marine waters and sediments. Emphasis will be on biogeochemical cycling of key elements in marine and estuarine ecosystems and their role in global processes. Chemical analysis and field collection techniques together with experimentation into the partitioning of chemical species among sediment, water, and biota will be conducted in the laboratory portion of the class. Laboratory fee; 4 credit hours.

MR 501-502 Senior Project in Marine Biology I and II
Prerequisites: marine biology major with senior standing. Individual/group-based research in marine biology. Students will develop specific research projects, conduct literature searches, plan and conduct experiments, analyze the data, and present their findings in a written report and at a student conference at the end of the second semester. 3 credit hours each term.

MR 599 Independent Study
Prerequisites: marine biology major, consent of the department. Weekly conferences with advisor. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest. A written report is required. 3 credit hours.

MUSIC

MU 106 Chorus
Styles of group singing, survey of choral music literature from around the world. 3 credit hours.

MU 111 Introduction to Music
Basic forms and styles of music in the Western world; music appreciation. 3 credit hours.

MU 112 Introduction to World Music
Non-Western musical styles, their cultures and aesthetics; music of the indigenous cultures of the Americas and the advanced musics of the Near East and Far East; emphasis on India, the Orient, Southeast Asia, Africa, and Indonesia. 3 credit hours.

MU 116 Performance
Open to all students interested in ensembles or private instruction. Students with adequate scholastic standing may carry this course for credit in addition to a normal program. 1-8 credit hours; maximum 3 credit hours per semester.

MU 125 Elementary Music Theory
A one-semester introduction to the basic principles of music, primarily for students who wish to gain insight into the fundamental structures and workings of the art form. Music majors who have not successfully passed the department placement examination must enroll in MU 125 and MU 126. Topics include notation, scales, key signatures, time signatures, staff recognition, intervals, triads. Non-music majors are not required to enroll in the laboratory. 3 credit hours.

MU 126 Elementary Music Theory Laboratory
Exercises in sight-singing, solfége, melodic and rhythmic dictation, and music notation. Should be taken concurrently with MU 125. 1 credit hour.

MU 150-151 Introduction to Music Theory I and II
Fundamentals of music: notation, physical and acoustical foundations; harmony and melody; modality, tonality, atonality; consonance and dissonance; tension; introductory composition; and ear training. 3 credit hours each term.

MU 175-176 Musicianship I and II
Prerequisites: MU 111 or MU 112; MU 150. Development of practical skills essential to performers and ensemble directors: ear training, sight-singing, dictation, transcription, arranging, notation, score writing. 3 credit hours each term.

MU 198-199 Introduction to American Music I and II
Music of the North American continent from the Puritans to the present day; both European and non-European musical traditions, with emphasis on twentieth-century developments. 3 credit hours each term.

MU 201-202 Analysis and History of European Art Music I and II
Prerequisites: MU 150, MU151. The growth of Western art music from its beginnings to the present day. Analysis of musical masterpieces on a technical and conceptual basis. 3 credit hours each term.

MU 211 History of Rock
Study of rock music as a musical tradition and social, political, and economic phenomenon. Ethno-musicological and historical examination of rock from its pre-1955 roots to the present. 3 credit hours.

MU 221 Film Music
Designed for both music and communication majors. Introduction to the art, science, and history of musical scores in film. Classwork includes viewing and analysis of films with significant cuing and an introduction to the musical repertoire available to the filmmaker. 3 credit hours.

MU 250-251 Theory and Composition I and II
Investigation of music theory in various parts of the world, including the Western art tradition. Exercises in the composition of music within these theoretical constructs. Ear training and keyboard harmony. 3 credit hours each term.

MU 261 Introduction to the Music Industry
An introduction to the music industry from the artist's point of view. Provides guidance to musicians and/or songwriters trying to break into the record industry. Topics include overview of the music industry, songwriting and publishing, the copyright law, music licensing, artist management, agents and attorneys, and recording contracts. 3 credit hours.

MU 299 Problems of Music
Music as an art form throughout the world. Music aesthetics and its relationship to the performance and composition of music. 3 credit hours.

MU 300 Studies in Music I
Area studies in music and its parent culture. Cultural theory as related to the music; instruments of the area and their etymologies; performance practices; the social role of music, both art and folk. Areas offered depend on availability of staff: China, Japan, the Near East, the Indian subcontinent, Africa, American Indian, Afro-American, Latin American, the Anglo-Celtic tradition, and others. 3 credit hours.

MU 301 Recording Fundamentals
Prerequisites: CO 103; PH 100 or PH 150. A study of the fundamentals of sound recording technique and methodology: acoustics, basic electronics, the decibel, magnetism, microphones, microphone placement, tape recorders, tape formats, mixers, signal processing and monitoring systems. This course also emphasizes the importance of sound aesthetics and ethics in the sound recording process. 3 credit hours.

MU 311-312 Multitrack Recording I and II
Prerequisite: MU 301. Two-semester course in the technique and methodology of multitrack studio and live recording. Includes detailed study of multiple tracking, mixing consoles, microphones, tape recorders, signal processors, studio procedures, sound synthesis, MIDI and digital audio. Also emphasizes the use of computers in the recording studio. Laboratory fee; 3 credit hours per semester.

MU 321 Sound Synthesis/MIDI
Prerequisite: MU 301. A study of the use of synthesizers, drum machines, sound modules, and computers in the recording studio. Using a combination of lecture/demonstrations as well as lab hours, students will explore the physics of sound, sound synthesis, instrument control, Musical Instruments Digital Interface (MIDI), and computers. Special emphasis will be placed on current sequencing, notation, and printing software. 3 credit hours.

MU 322 Sound System Design and Maintenance
Prerequisite: MU 311. This course covers the basics of sound system troubleshooting and maintenance. Topics include sound systems, the decibel, reading specs and diagrams, basic electronics, cabling, and test equipment. 3 credit hours.

MU 350 Studies in Music II
Area studies in musical forms; their history, evolution, and resultant metamorphoses; performance practices and extant forms. Areas offered depend upon availability of staff. 3 credit hours.

MU 361 Production, Promotion, and Distribution
Prerequisite: MU 261. An overview of the music industry from the record company's perspective. Provides guidance to music enthusiasts who want to become record company executives, sales managers, producers, etc. Topics include record company administration; business aspects of record production; promotion, publicity, and distribution; recording studio management; radio station programming and management; music videos; the retail music store. 3 credit hours.

MU 362 Legal Issues, Copyrights, and Contracts
Prerequisite: MU 261. A comprehensive overview of the legal procedures, timings, and agreements used in the music industry. Includes detailed study of the current copyright law, publishing contracts, licensing, the manager and/or agent agreement, the record company contract, AFM and AFTRA agreements, and ethical considerations in the music industry. 3 credit hours.

MU 401-402 Recording Seminar/Project I and II
Prerequisite: MU 312. Each student will complete a professional- quality recording production or research and development project. Work may consist of internship or co-op experience in a professional recording studio. Seminar will also include presentations on areas of professional interest such as career opportunities and new development in studio technique and technology. Laboratory fee; 3 credit hours each term.

MU 416 Advanced Performance
Prerequisites: consent of the department staff and a faculty advisor. Preparation and presentation of an instrumental or vocal performance indicating sufficient proficiency to warrant the awarding of a degree in music. 3 credit hours.

MU 450 Special Topics in Music
Study of selected topics of special or current interest. 3 credit hours.

MU 461-462 Internship in the Music Industry I and II
Prerequisites: MU 361 and MU 362. The purpose of this course is to provide the student with advanced on-the-job training via placement as an apprentice/intern in music industry companies such as recording studios, radio stations, music stores, record companies, etc. 3 credit hours each term.

MU 500-502 Seminars in Advanced Research
Prerequisite: permission of instructor. Bibliographical studies of major world music areas; investigation of current and historical musicological theories; analysis and criticism of musicological area literatures. 3 credit hours each term.

MU 550 Studies in Urban Ethnic Music
Prerequisite: consent of instructor. The music tradition of inner-city ethnic groups; emphasis on the operation of the oral tradition in the preservation of cultural values and customs as evidenced through music. Classroom discussion will be balanced by field research in the urban vicinity. 3 credit hours.

MU 599 Independent Study
Opportunity for the student under the direction of a faculty member to explore an area of personal interest. This course must be initiated by the student. 1-3 credit hours per semester, with a maximum of 12 hours.

PSYCHOLOGY

P 111 Introduction to Psychology
Understanding human behavior. Motivation, emotion, learning, personality development, and intelligence as they relate to normal and deviant behavior. Applying psychological knowledge to everyday personal and societal problems. 3 credit hours.

P 212 Business and Industrial Psychology
Prerequisite: P 111. Psychological principles and research as they apply to the problems of working with people in organizations. Analysis of problems and decisions in this use of human resources, including selection and placement, criterion measurement, job design, motivation. 3 credit hours.

P 216 Psychology of Human Development
Prerequisite: P 111. Human development over the life cycle–conception through death: the changing societal and institutional framework, key concepts and theoretical approaches, understanding development through biography, child rearing and socialization here and abroad. 3 credit hours.

P 218 Sensation & Perception
Prerequisite: P 111.This course will examine how humans process the stimuli that surround them (sensation) and how the brain interprets these stimuli (perception). Furthermore, it will explore how our interpretations and our responses to environmental stimuli are influenced by our experiences, culture, physiology, emotional state, and the social situation. 3 credit hours.

P 220 Psychology of Language & Reading
Prerequisite: P 111. This course introduces students to the principles of how humans acquire and understand language. It examines the mental processes involved in different forms of language use (e.g., speech, conversation, writing, and thought) with a special focus on the processes involved in reading comprehension. Furthermore, the course includes an examination of some of the difficulties often encountered when processing language, including aphasia and dyslexia. 3 credit hours.

P 260 Drugs & Behavior
Prerequisites: P 111and BI 121-122. This course introduces the student to the relationship between drugs (legal and illegal) and human behavior. The main topics will include the role of drugs in today's society, drug abuse and addiction, the treatment of addiction, and the use of psychoactive drugs in treating psychological disorders. 3 credit hours.

P 301 Statistics for the Behavioral Sciences
Prerequisite: M 127. Concepts and assumptions underlying statistical methods essential to design and interpretation of research on human subjects. Fundamental descriptive and inferential methods. This course includes training in the use of a computer statistics program. 4 credit hours. (This course is cross-listed with M 228 Elementary Statistics.)

P 305 Experimental Methods in Psychology
Prerequisite: P 301. Methods of

designing and analyzing psychological experiments. The scientific method as applied to psychology. Consideration of research techniques, experimental variables, design problems, data analysis. This course includes training in the use of a computer statistics program. 3 credit hours.

P 306 Psychology Laboratory
Prerequisite: P 305. Group and individual experiments to be carried out by students. Research techniques for studying learning, motivation, concept formation. Data analysis and report writing. Offered only in spring semester of odd-numbered years. 3 credit hours.

P 312 Cognitive Psychology
Prerequisites: P 111. This course introduces students to the important psychological theories concerning the way in which the human mind perceives, interprets, processes, stores, and retrieves information about the world. Furthermore, the course will illustrate how the mind's mental representations of objects and events serve as the basis for learning and memory, pattern recognition, the use of language, and our ability to reason and solve problems. 3 credit hours.

P 315 Human and Animal Learning
Prerequisite: P 111. Different types of human and animal learning. Learning as an adaptive mechanism. Psychological principles underlying learning. Practical applications of learning principles. 3 credit hours.

P 316 The Psychology of Health and Sport
Prerequisite: P 111. The role of psychological factors in the cause and prevention of physical illness. The modification of unhealthful behaviors. The study of stress and the management of stress, particularly during athletic competition. The nature of pain and pain management. The role of emotion in athletic performance. The use of psychology in athletic performance enhancement. Threats to the health of athletes. 3 credit hours.

P 321 Social Psychology
Prerequisites: P 111, SO 113. The interdependence of social organizations and behavior. The interrelationships between role systems and personality; attitude analysis, development, and modification; group interaction analysis; social conformity; social class and human behavior. Offered only in spring semester of odd-numbered years. 3 credit hours. (Same course as SO 320)

P 330 Introduction to Community Psychology
Prerequisite: P 111. Key concepts of community psychology/community mental health. Community problems, needs, and resources. The helping relationship. Intervention techniques. Programming services. Understanding behavioral differences. Careers in community psychology. 3 credit hours.

P 331-332 Undergraduate Practicum I and II in Community/Clinical Psychology
Corequisite: P 330 or permission of instructor. Supervised field experience in community psychology/mental health settings. Exploration of service delivery. Development of basic repertoire of helping skills. Behavioral log. Project reporting. Understanding helping roles at individual, small-group, and institutional levels. 1-6 credit hours, with a maximum of 3 credit hours per semester.

P 336 Abnormal Psychology
Prerequisite: P 111. Psychological and organic factors in personality disorganization and deviant behavior. Psychodynamics and classifications of abnormal behavior. Disorders of childhood, adolescence, and old age. Evaluation of therapeutic methods. 3 credit hours.

P 341 Psychological Theory
Prerequisite: P 111. Contemporary theory in psychology. Emphasis on those theories which have most influenced thinking and research in sensation, perception, learning, motivation, personality. Offered only in fall semester of odd-numbered years. 3 credit hours.

P 350 Human Assessment
Prerequisite: P 301. Basic principles of measurement, applied to problems of the construction, administration, and interpretation of standardized tests in psychological, educational, and industrial settings. Offered only in fall semester of odd-numbered years. 3 credit hours.

P 351 Behavior Therapies
Prerequisite: P 111. Principles of therapeutic behavior management. Alteration of maladaptive behavior patterns in institutional, neighborhood, home, educational, and social settings by operant and respondent reinforcement techniques. Habit management in oneself and in one's children. Offered only in spring semester of even-numbered years. 3 credit hours.

P 360 Cognitive Neuroscience
Prerequisite: P 111 and BI 121-122. This course explores the neurological underpinnings related to cognitive processes and their associated behaviors. Specifically, the course will focus on the brain's role in complex human behaviors such as attention, body movement, consciousness, emotions, decision making, formation and retrieval of memories, and the production and understanding of language. 3 credit hours.

P 361 Behavioral Neuroscience
Prerequisites: P 111; BI 121 and BI 122. Endocrinological, neural, sensory, and response mechanisms involved in learning, motivation, adjustment, emotion, and sensation. Offered only in spring semester of even-numbered years. 3 credit hours.

P 370 Psychology of Personality
Prerequisites: P 111, junior status. Theory and method in the understanding of normal and deviant aspects of personality; theories of Freud, Jung, Rogers, neo-Freudians, and others. 3 credit hours.

P 375 Foundations of Clinical/Counseling Psychology
Prerequisite: P 336. Course will review the humanistic, psychoanalytic, and behaviorist views on the emergence and treatment of psychopathology. The fit between theory and technique will be explored. 3 credit hours.

P 480-484 Special Topics in Psychology
Selected topics of special or current interest. 3 credit hours.

P 599 Independent Study
Prerequisites: consent of faculty member and department chair. Opportunity for the student under the direction of a faculty member to explore an area of personal interest. This course must be initiated by the student after conferring with the faculty member who has agreed to supervise the project. 1-3 credit hours.

PUBLIC MANAGEMENT

PA 101 Introduction to Public Administration
The nature of and problems involved in the administration of public services at the federal, state, regional, and local levels. 3 credit hours.

PA 302 Public Administration Systems and Procedures
The major staff management functions in government and in nonprofit agencies: planning, budgeting, scheduling, and work analysis. 3 credit hours.

PA 305 Institutional Budgeting and Planning
Budgeting as an institutional planning tool, as a cost control device, and as a program analysis mechanism is stressed. Attention is given to the salary expense budget, the revenue budget, the capital budget, and the cash budget. 3 credit hours.

PA 307 Urban and Regional Management
Methods and analysis of decision making related to urban and regional problems. Topics include housing, land use, economic development, transportation, pollution, conservation, and urban renewal. 3 credit hours.

PA 308 Health Care Delivery Systems
An examination of the health care delivery systems in the U.S., including contemporary economic, organizational, financing, manpower, cost, and national health insurance issues. 3 credit hours.

PA 404 Public Policy Analysis
Using the public perspective, examines the nature of the public policy process from policy formation through policy termination. Major emphasis on the techniques commonly used in analyzing public policy, including cost/benefit analysis and comparison of expected and actual outcomes. An opportunity to gain hands-on experience in the analysis and evaluation of public policy. 3 credit hours.

PA 405 Public Personnel Practices
Study of the civil service systems of the federal, state and local governments, including a systematic review of the methods of recruitment, evaluation, promotion, discipline, control, and removal. 3 credit hours.

PA 408 Collective Bargaining in the Public Sector
Analysis of collective bargaining in the public sector, with emphasis on legislation pertaining to government employees. 3 credit hours.

PA 450-454 Special Topics
Selected topics of special or current interest in the field of public management. 3 credit hours.

PA 490 Public Health Administration
An examination of public health activities, including public health organization, environmental health, disease control, use of information systems, and social services. 3 credit hours.

PA 512 Seminar in Public Administration
Selected topics related to public administration are chosen for study in depth. 3 credit hours.

PA 597 Practicum
Prerequisite: junior standing. A course of study designed especially for the supervised practical application of previously studied theory in a group setting. Done under the supervision of a faculty sponsor and coordinated with a business organization. 3 credit hours.

PA 598 Internship
Prerequisite: consent of the coordinator. Monitorial field experience with public and not-for-profit agencies. Minimum of 3 credit hours.

PA 599 Independent Study
Independent study on a project of interest to the student under the direction of a faculty member approved by the department chair. 3 credit hours.

PHYSICS

"+" denotes courses offered on an "as needed" basis.

PH 100 Introductory Physics with Laboratory
Prerequisite: M 109/M 127 or equivalent math competency. A one-semester introduction to the science of physics primarily for liberal arts, business, and hospitality/tourism students. The course provides a broad, algebra-based understanding of the basic laws of nature, their application to our everyday lives, and their impact on our technological society. Laboratory fee; 4 credit hours.

PH 101 Energy – Present and Future
Prerequisite: M 109, M 127 or equivalent math competency. Intended primarily for business and liberal arts students. Explores the nature, role, and economic impact of energy in our society. Topics include the nature and growth of energy consumption, physical limits to energy production and consumption, environmental effects, and comparisons of energy alternatives. Special emphasis on the technical, environmental, and economic aspects of nuclear power as well as energy sources of the future such as fast-breeder reactors, fusion, solar, and geothermal power. 3 credit hours.

PH 103-104 General Physics I and II with Laboratory
Prerequisite: M 109, M 127 or equivalent math competency. Primarily for life science majors with no calculus background. Basic concepts of classical physics: fundamental laws of mechanics, heat, electromagnetism, optics, and conservation principles. Introduction to modern physics: relativity and quantum theory; atomic, nuclear, and solid-state physics. Application of the physical principles to life sciences. Laboratory fee; 4 credit hours per term.

PH 150 Mechanics, Heat, and Waves with Laboratory
Prerequisite: M 117. Introductory course for physical science and engineering majors. Kinematics, Newton's laws, conservation principles for momentum, energy, and angular momentum. Thermal physics. Basic properties of waves, simple harmonic motion, superposition principle, interference phenomena, and sound. Laboratory fee; 4 credit hours.

PH 203 The Physics of Music and Sound with Laboratory
Prerequisites: PH 100 or PH 103 or PH 150 or equivalent. A second-semester course in physics for music and sound recording majors and others with a special interest in music, acoustics, or sound and hearing. Study of the physics underlying such things as the production of sound by musical instruments, electromagnetic storage and reproduction of sound, human hearing, and acoustics of concert halls and other spaces. Integrated laboratory experiments provide hands-on experience of these phenomena. Laboratory fee; 4 credit hours.

PH 205 Electromagnetism and Optics with Laboratory
Prerequisites: PH 150, M 118. Basic

concepts of electricity and magnetism; Coulomb's law, electric field and potential, Gauss's law, Ohm's law, Kirchoff's rules, capacitance, magnetic field, Ampere's law, Faraday's law of induction, Maxwell's equations, electromagnetic waves. Fundamentals of optics; light, laws of reflection and refraction, interference and diffraction phenomena, polarization, gratings, lenses and optical instruments. Laboratory fee; 4 credit hours.

PH 207 Engineering Physics
Prerequisites: one full year of non-calculus physics with laboratories, two semesters of calculus. A one-semester course primarily for engineering transfer students who had one-year non-calculus physics sequence in two-year colleges and technical schools. All the major topics of PH 150-PH 205 are covered with an ample use of calculus. PH 207 should not be used as a technical elective. 4 credit hours.

PH 211 Modern Physics
Prerequisite: PH 205. Modern physics fundamentals. Twentieth century developments in the theory of relativity and the quantum theory. Atomic, nuclear, solid-state, and elementary particle physics. 3 credit hours.

+PH 270 Thermal Physics
Prerequisite: PH 103 or PH 150. Basic thermodynamics and its applications. Major emphasis on the efficiency of energy conversion and utilization. Topics include the laws of thermodynamics, entropy, efficiency of heat engines, solar energy, the energy balance of the earth, energy systems of the future, economics of energy use. 3 credit hours.

+PH 280 Lasers
Prerequisite: PH 205. Laser theory, holography, construction, and application to latest engineering and scientific uses. 3 credit hours.

+PH 285 Modern Optics
Prerequisite: PH 205. Introduction to optical theories. Topics on the latest developments in optics. Application to life sciences and engineering. 3 credit hours.

+PH 301 Analytical Mechanics
Prerequisites: PH 150, M 204, or instructor's consent. This is an intermediate-level course in Newtonian mechanics. Selected topics include the formulation of the central force problem and its application to planetary motion and to scattering, theory of small oscillations, dynamics of rigid body motion, and an introduction to Lagrangian and Hamiltonian formalism. 3 credit hours.

PH 303 Radioactivity and Radiation
Prerequisite: a college chemistry course or permission of instructor. Intended for students in occupational safety and health, fire science, forensic science, and related fields as well as for science and engineering students with interest in this area. Topics include the nature of radiation and radioactivity, the interaction of radiation with matter, biological effects of radiation, detection and measurement of radiation, shielding considerations, dosimetry, and standards for personal protection. 3 credit hours.

+PH 401 Atomic Physics
Prerequisite: PH 211. Structure and interactions of atomic systems including Schrodinger's equation, atomic bonding, scattering and mean free path, radiative transitions, and laser theory. 3 credit hours.

+PH 406 Solid-State Physics
Prerequisite: PH 211. Introduction to the physics of solids with emphasis on crystal structure, lattice vibrations, band theory, semiconductors, magnetism and superconductivity. Applications to semiconductor devices and metallurgy. 3 credit hours.

+PH 415 Nuclear Physics
Prerequisite: PH 211 or consent of instructor. Elementary nuclear physics. Nuclear structure, natural radioactivity, induced radioactivity, nuclear forces and reactions, fission and fusion, reactors, and topics of special interest. 3 credit hours.

PH 450 Special Topics in Physics
Study of selected topics of special or current interest. 3 credit hours.

+PH 451 Elementary Quantum Mechanics
Prerequisite: PH 211 or consent of instructor. An elementary treatment of nonrelativistic quantum mechanics. Schrodinger's equation, with its applications to atomic and nuclear structure; collision theory; radiation; introductory perturbation theory. 3 credit hours.

+PH 470 Theory of Relativity
Prerequisite: PH 211 or consent of instructor. Introduction to Einstein's theory of relativity. Special theory of relativity; Lorentz transformations, relativistic mechanics and electromagnetism. General theory of relativity; equivalence principle, Einstein's three tests, graviton, black hole, and cosmology. 3 credit hours.

PH 599 Independent Study
Prerequisites: consent of faculty member and department chair. Opportunity for the student under the direction of a faculty member to explore an area of personal interest. This course must be initiated by the student. 1-3 credit hours.

PHILOSOPHY

PL 101 Introduction to Philosophy
The nature of reality and how it may be known, according to the great thinkers of the Occident and the Orient. 3 credit hours.

PL 205 Classical Philosophy
The origins of philosophy and the continuing influence of classical thought on the development of ideas. 3 credit hours.

PL 206 Modern Philosophy: Descartes to the Present
Philosophical theories that have dominated the modern age. Stress on a central figure of the period. 3 credit hours.

PL 210 Logic
Modern symbolic logic and its applications. 3 credit hours.

PL 215 Nature of the Self
Investigation of personal identity, human nature, and the mind from ancient, modern, Western, and Eastern perspectives. 3 credit hours.

PL 222 Ethics
How shall one live? Critical examination of answers proposed by classic and modern philosophers of the major world traditions. 3 credit hours.

PL 240 Philosophy of Science and Technology
Scientific method, the logic of scientific explanation, the application of science to practical problems and questions peculiar to the social sciences. 3 credit hours.

PL 250 Philosophy of Religion
An examination of some philosophical notions used in religious discourse, such as meaning, truth, faith, being, God, the holy. 3 credit hours.

PL 333 Professional Ethics
Prerequisite: junior or senior standing or permission of instructor. What does it mean to be a professional? This course examines the relationship among technical competence, financial gain, and ethical responsibility. 3 credit hours.

PL 356 Philosophy of Art
Corequisite: a course in one of the arts or junior or senior standing. Comparative study of beliefs in cultures around the world about art. beauty, and aesthetics. Topics include definitions of art, natural beauty versus artifice, the nature of aesthetic experience, cultural relativism, and the value of art in an age of science and globalization. 3 credit hours.

PL 450 Special Topics in Philosophy
Study of selected topics of special or current interest. 3 credit hours.

PL 599 Independent Study
Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 1-3 credit hours.

POLITICAL SCIENCE

(†) *indicates Institute of Law and Public Affairs courses.*

PS 101 Introduction to Politics
A basic course introducing students to the discipline of political science and its subjects: political theory, law, national government, international relations, comparative government, and political economy. 3 credit hours.

PS 121 American Government and Politics
A basic study of the American political system. Constitutional foundations, the political culture, Congress, the Presidency, the judicial system, political parties, interest groups, news media, individual liberties, federalism, the policy-making process. 3 credit hours.

PS 122 State and Local Government and Politics
Problems of cities, revenue sharing, community power structures, welfare, public safety, the state political party, big-city political machines, interest groups, state legislatures, the governor, the mayor, courts, and judicial reform. 3 credit hours.

PS 203 American Political Thought
Pre-Revolutionary and Revolutionary political thought; classical conservatism, liberalism, Jacksonian democracy, civil disobedience, social Darwinism, progressive individualism, and pluralism. 3 credit hours.

PS 205 The Politics of the Black Movement in America
The political development of the Black Movement in America emphasizing ideological, legal, and cultural perspectives. 3 credit hours.

PS 216 Urban Government and Politics
A study of the urban political process. Structures and organizations of urban governments, decision making, public policy, the "urban crisis," crime and law enforcement, party politics and elections, taxation and spending patterns, environmental problems, management of urban development. 3 credit hours.

PS 222 United States Foreign Policy
An examination of the global foreign policy of the United States and of the process of policy making involving governmental and non-governmental actors. A review of the political, economic, military, and cultural tracks of policy. 3 credit hours.

†PS 224 Public Attitudes and Public Policy
A study of the sources of mass political attitudes and behavior and their effect upon public policy. The course will examine the techniques for influencing opinion, including propaganda and mass media communications. 3 credit hours.

†PS 228 Public Interest Groups
Examination of group institutions of the American political culture. Emphasis on the legal nature, purpose, and function of each operational organization in the political process. 3 credit hours.

†PS 229 Legal Communications
Familiarization with the kinds of legal documents and written instruments employed by participants in the legal process. Recognization and understanding of the purpose of writs, complaints, briefs, memoranda, contracts, wills, and motions. 3 credit hours.

†PS 230 Anglo-American Jurisprudence
Surveys ideas about the nature of law. Legal philosophers examined include Plato, Aristotle, St. Thomas Aquinas, John Austin, William Blackstone, Benjamin Cardozo, L.A. Hart, and Oliver Wendell Holmes. The contribution to legal theory made by various schools of jurisprudence (e.g., positivism, legal realism). 3 credit hours.

†PS 231 Judicial Behavior
Examination of the American court system as a political policy-making body. Topics considered include the structure of the judicial system, the influence of sociological and psychological factors on judicial behavior, and the nature and impact of the judicial decision-making process. 3 credit hours.

PS 232 The Politics of the First Amendment
Prerequisite: PS 121. Examination of the political implications of the First Amendment freedoms of speech, press, and religion; Supreme Court adaptation of the First Amendment to changing political and social conditions. 3 credit hours.

PS 241 International Relations
Forces and structures operating in the modern nation-state system, the foreign policy process, decision-making process, the impact of decolonization on traditional interstate behavior, economic and political developments since World War II. 3 credit hours.

PS 243 International Law and Organization
Prerequisite: PS 241. Traditional and modern approaches to international law and organization; major emphasis on the contribution of law and organization to the establishment of a world of law and world peace. The League of Nations system and the United Nations system are analyzed. 3 credit hours.

PS 261 Modern Political Analysis
Introduction to political analysis, including quantitative and qualitative techniques, systems and data analysis, role and group theory, simulations and projections using computerized models. 3 credit hours.

PS 281 Comparative Political Systems: Asia
Traditional and modern political and social structures of China, Japan, Korea, and other Asian states, including the function of the political system within each country. 3 credit hours.

PS 282 Comparative Political Systems: Europe
Political characteristics of modern European states. Emphasis on political, social, and economic institutions and structures. Special attention to European integration and the European Union; changes in Eastern Europe and the former USSR. 3 credit hours.

PS 283 Comparative Political Systems: Latin America
Political modernization, development in Latin America, political institutions, national identity, leadership, integration, political socialization, and political ideologies. 3 credit hours.

PS 285 Comparative Political Systems: Middle East
Analysis of the Arab and non-Arab states in the region with particular attention to the political systems, violence, and the problems of tradition vs. modernity. 3 credit hours.

PS 304 Political Parties
Prerequisite: PS 121. Voting and electoral behavior, nominations and campaign strategy, pressure groups, political party structure and functions of the party system in the American political community. 3 credit hours.

PS 308 Legislative Process
Prerequisite: PS 121. Legislative process in the American political system; legislative functions; selection and recruitment of candidates; legislative leadership, the committee system; lobbyists, decision-making; legislative norms, folkways, and legislative executive relations. 3 credit hours.

PS 309 The American Presidency
The role of the President as commander-in-chief, legislative leader, party leader, administrator, manager of the economy, director of foreign policy, and advocate of social justice; nature of presidential decision making, authority, power, influence, and personality. 3 credit hours.

PS 331 Theory and the Supreme Court
An examination of the ways in which the Supreme Court exercises judicial review with particular emphasis on the various theories of review as they have evolved from John Marshall to the present. 3 credit hours.

PS 332 Constitutional Law
Prerequisite: PS 121. Principles and concepts of the United States Constitution as revealed in leading decisions of the Supreme Court and the process of judicial review. 3 credit hours.

†PS 340 Campaign Management: Procedures and Operations
A study of the procedures and operations of the contemporary political campaign, including issue development, voter registration, canvassing, media usage, fundraising, scheduling, campaign data, etc. 3 credit hours.

†PS 341 Campaign Management: Structure and Organization
Exploration of the structure, organization, and management of the campaign operation and the handling, roles, and tasks of the campaign personnel. 3 credit hours.

†PS 344 Campaign Management: Survey Research, Polling, and Computers
A study of the uses and interpretation of survey research, polling projects, and computer techniques and their application to political campaigns. 3 credit hours.

†PS 346 Campaign Management: Financing and Election Laws
Exploration of the methods used to finance a political campaign; the nature of campaign costs; the role of political action committees; the effects of campaign finance laws; and the technical aspects and political implications of election laws at the federal, state, and local levels. 3 credit hours.

PS 350 Public Policy: U.S. National Security
The development and operation of U.S. military and national security policy from George Washington to the present with major emphasis on the twentieth century and post-World War II era. 3 credit hours.

PS 355 Terrorism
Examination of the modern applications of terrorism in international affairs, paying special attention to ideological and infrastructure determinants. 3 credit hours.

PS 390 Political Modernization
Comparative analysis of political change and development. Political transition, political integration, and nation building; institutional developments; political parties; military elites; youth; intellectuals; the bureaucracy; economic development; and political culture. 3 credit hours.

†PS 415 Internship in Legal and Public Affairs
Prerequisite: permission of the instructor is required. Students will have the opportunity to work as paraprofessionals in legislatures, government agencies, and party organizations and to share their experi-

ences with other interns in legal and public affairs. 3 credit hours.

†PS 450 Campaign Management: Internship
Actual work experience in campaign management. 3 credit hours.

PS 461 Political Theory: Ancient and Medieval
Foundations of Western political thought from the Greek, Roman, and medieval experiences as it applies to the total discipline of political science. 3 credit hours.

PS 462 Political Theory: Modern and Contemporary
A continuation of the study of political thought from the High Middle Ages to contemporary theorists. 3 credit hours.

PS 494-498 Special Topics in Political Science
Special studies on a variety of current problems and specialized areas in the field not available in the regular curriculum. 3 credit hours per course.

PS 499-500 Senior Seminar in Political Science I and II
Prerequisite: permission of department chair. Capstone course in which students use the tools of their discipline to examine a selected problem. May be conducted as a proseminar. Required of all political science majors. 3 credit hours per term.

PS 599 Independent Study
Directed research on special topics to be selected in consultation with the department chair and a sponsoring faculty member. 3 credit hours.

QUANTITATIVE ANALYSIS

QA 118 Business Mathematics
Prerequisite: M109 or successful completion of qualifying placement test by the mathematics department. This course is designed to improve the quantative reasoning skills of business students. It provides an introduction to two important knowledge bases: linear functions and systems and the fundamentals of the derivative and integration and their uses in business decision making. The focus of the course will be on the application of these mathematical concepts to personal business, management, marketing, and finance issues. Excel spreadsheet applications will be used extensively throughout the course. 3 credit hours.

QA 216 Business Statistics
Prerequisite: QA 118 or equivalent. A course in elementary probability and statistical concepts and theory, with emphasis on data analysis and presentation; probability theory; sampling distributions; statistical inference; Z-test, T-test, and Chi-Square test. Simple and Multiple Regression Analysis will also be covered. 3 credit hours.

QA 328 Quantitative Techniques in Management
Prerequisites: QA 216 and junior standing. An introduction to quantitative techniques in management. Topics include linear programming, assignment problems, transportation algorithms, network and inventory models, and decision theory. 3 credit hours.

QA 343 Management Information Systems
Prerequisite: QA 216. This course provides methodology of the design, analysis, and evaluation of management information systems (MIS). Topics include organizational implications of information technology, planning and control systems, implementation of an integrated system, technical treatment of MIS management, and application of computers via computer packages in business environments. 3 credit hours.

QA 350 Quantitative Techniques
Prerequisites: QA 216 and junior standing. Advanced applications of quantitative techniques to the solution of business problems. Topics include classical optimization techniques, nonlinear programming, topics in mathematical programming, and graph theory. 3 credit hours.

QA 380 Operations Management
Prerequisite: QA 216. Basic review of service and production systems designs and performance evaluation. Topics include operations strategy, staff and production scheduling, Just-in-Time and time-based competition, project management, and the role of technology in service and manufacturing operations. 3 credit hours.

QA 428 Forecasting for Decision Making
Prerequisite: QA 216. Review of different approaches to forecasting used by management at different levels of decision making. Techniques will include smoothing and decomposition, causal and judgmental methods. Computer applications and

modeling will be emphasized. 3 credit hours.

QA 450-454 Special Topics
Prerequisite: QA 216. Coverage of new and emerging topics and applications in quantitative analysis. 3 credit hours.

QA 480 Project Management
Prerequisite: QA 216. Survey of management techniques applicable to a wide variety of business-related project types. Emphasis on the project management cycle, including selecting, scheduling, budgeting, and controlling projects. Desired qualifications and roles of project managers. Extensive use of project management software will be required. 3 credit hours.

QA 597 Practicum
Prerequisite: junior standing. A course of study designed especially for the supervised practical application of previously studied theory in a group setting. Done under the supervision of a faculty sponsor and coordinated with a business organization. 3 credit hours.

QA 598 Internship
Prerequisite: QA 216. Supervised field experience for qualified students in an area related to operations management or quantitative analysis. 3 credit hours.

QA 599 Independent Study
Prerequisites: QA 118, QA 216, and junior standing. Independent research projects or other approved forms of independent study. 3 credit hours.

RUSSIAN

RU 101-102 Elementary Russian I and II
Stresses pronunciation, aural and reading comprehension, basic conversation, and the fundamental principles of grammar. 3 credit hours per term.

RU 201-202 Intermediate Russian I and II
Prerequisites: RU 101-102 or the equivalent. Stresses reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to read in their own areas of interest. 3 credit hours per term.

SCIENCE

Courses that are marked with an asterisk (*) are usually scheduled every other academic year. Courses marked with † are offered at the discretion of the department.

†SC 111-112 Physical Science I and II
The meaning of scientific concepts and terms and their relation to other areas of learning and to daily living. Development and unity of physical science as a field of knowledge. Includes astronomy, physics, chemistry, and geology. 3 credit hours per term.

***SC 126 Astronomy**
An introduction to present concepts concerning the nature and evolution of planets, stars, galaxies, and other components of the universe. The experimental and observational bases for these concepts are examined. 3 credit hours.

†SC 135 Earth Science
A dynamic systems approach to phenomena of geology, oceanography, and meteorology. Emphasis on interrelations of factors and processes and on importance of subject matter to human affairs. Suitable for non-science as well as science majors. 3 credit hours.

OCCUPATIONAL SAFETY AND HEALTH

SH 100 Safety Organization and Management
History and development of the safety movement, nature and extent of the problem, development of worker's compensation, development of safety programs, cost analysis techniques, locating and defining accident sources, analysis of the human element, employee training, medical services and facilities, and the "what" and "how" of the Occupational Safety and Health Act. 3 credit hours.

SH 110 Accident Conditions and Controls
Mechanical hazards, machine and equipment guarding, boilers and pressure vessels, structural hazards, materials handling hazards and equipment use, electrical hazards, personal protective equipment. 3 credit hours.

SH 200 Elements of Industrial Hygiene
Analysis of toxic substances and their effect on the human body.

Analysis and effect of chemical hazards, physical hazards of electromagnetic and ionizing radiation, abnormal temperatures and pressure, noise, ultrasonic and low-frequency vibration; sampling techniques including detector tubes, particulate sampling, noise measurement, and radiation detection; governmental and industrial hygiene standards and codes. 3 credit hours.

SH 210 Sound/Hearing/Noise
Prerequisite: SH 200. An analysis of three major factors associated with the noise issue; the physics of sound, the biological phenomenon of hearing, and the engineering processes of noise abatement including a review of the OSHA legal standards for noise exposure. 3 credit hours.

SH 400 Occupational Safety and Health Legal Standards
All aspects of the legal constraints applicable to the occupational safety field. Includes OSHA, federal laws not under OSHA jurisdiction, selected state legislation, current and pending product liability laws, environmental protection law, and fire safety codes. Emphasizes particular legal areas as requested. 3 credit hours.

SH 401 Industrial Hygiene Measurements
Prerequisite: SH 200. Current methods and techniques used in evaluating the occupational environment. Instruction on how to use the instruments necessary to measure ventilation, nonionizing radiation, airborne contaminants, noise and heat stress. Instruction on how to present data and prepare reports will also be included. 3 credit hours.

SH 500 Special Topics
Selected study topics of special or current interest. 3 credit hours.

SH 599 Independent Study
Prerequisites: consent of faculty member and chair of department. Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 1-3 credit hours.

SOCIOLOGY

SO 113 Sociology
The role of culture in society, the person, and personality; groups and group behavior; institutions; social interaction and social change. 3 credit hours.

SO 114 Contemporary Social Problems
Prerequisite: SO 113 or consent of instructor. The major problems which confront the present social order; the methods now in practice or being considered for dealing with these problems. 3 credit hours.

SO 115 Women in Society
An overview of women's role in the social system. Discussion includes myths and realities of sex differences. Areas covered include analysis of the relationships of women to the economy, the arts, and the sciences and how these affect the behavior of women in the contemporary world. 3 credit hours.

SO 214 Deviance
Prerequisite: SO 113 or consent of the instructor (offered in the spring semester only). Centered around deviance as a social product. The problematic nature of the stigmatization process is explored in such areas as alcoholism, crime, mental illness, and sexual behavior. 3 credit hours.

SO 218 The Community
Prerequisite: SO 113 or consent of instructor. The community and its provisions for health, education, recreation, safety, and welfare. Theoretical concepts of community, plus ethnographic studies of small-scale human communities, introduce students to fundamental concepts of community. 3 credit hours.

SO 220 Physical Anthropology and Archaeology
An introduction to the study of human evolution and of present physical variations among humankind. Includes geologic time, primate evolution, and early humans and their culture. 3 credit hours.

SO 221 Cultural Anthropology
A systematic study of the culture of preliterate and modern societies and of cultural change. Includes analysis of religion, economics, language, social and political organization, and urbanization. 3 credit hours.

SO 231 Juvenile Delinquency
Prerequisites: SO 113, P 111. An analysis of delinquent behavior in American society; examination of the theories and social correlates of delinquency and the sociolegal processes and apparatus for dealing with it. 3 credit hours. (See also CJ 221.)

SO 250 Research Methods
Prerequisite: sophomore status. The student develops the concepts neces-

sary for selection and formulation of research problems in social science, research design and techniques, analysis and interpretation of research data. 3 credit hours.

SO 310 Primary Group Interaction
Prerequisite: SO 113. Exploration of communication in group process. Building a group and analyzing group structure and interaction; the ways people communicate emotionally and intellectually. 3 credit hours.

SO 311 Criminology
Prerequisites: P 111, SO 113. An introduction to the principles and concepts of criminology; analysis of the social context of criminal behavior, including a review of criminological theory, the nature and distribution of crime, the sociology of criminal law, and the societal reactions to crime and criminals. 3 credit hours. (See also CJ 311)

SO 312 Marriage and the Family
Prerequisite: SO 113 or consent of instructor. The formation, functioning, and dissolution of relationships in contemporary American society are examined from an applied sociology perspective. 3 credit hours.

SO 313 Sociology of Sport
Prerequisite: SO 113 or consent of instructor. A study of the relationships among sport, culture, and society. Emphasis is on both amateur and professional sports and their impact on the larger social order. Course will examine sport from a comparative and historical perspective but also focus on problems confronting the world of sport in contemporary American society. 3 credit hours.

SO 315 Social Change
Prerequisite: SO 113 or consent of instructor. Sources, patterns, and processes of social change with examination of classical and modern theories of major trends and developments as well as studies of perspectives on microlevels of change in modern society. 3 credit hours.

SO 320 Social Psychology
Prerequisites: P 111, SO 113. The interdependence of social organizations and behavior. The interrelationships between role systems and personality; attitude analysis, development, and modification; group interaction analysis; social conformity; social class and human behavior. 3 credit hours. (See also P 321.)

SO 321 Social Inequality
Prerequisite: SO 113 or consent of instructor. Organization of social class: status, power, and process of social mobility in contemporary society. Social stratification, its functions and dysfunctions, as it relates to the distribution of opportunity, privilege, and power in society. 3 credit hours.

SO 331 Population and Ecology
Prerequisite: SO 113 or consent of instructor. Societal implications of population changes and trends; impact of humans as social animals on natural resources, cultural values, and social structures; influence on environmental ethics. 3 credit hours.

SO 333 Sociology of Aging
Prerequisite: SO 113 or consent of instructor. The sociological phenomena connected with aging in America. Discussion of the connections between personal troubles and social issues encountered by members of this society as they age. An examination of age stratification and the resultant problems of ageism, prejudice, and discrimination. Systematic review of major theoretical framework and research studies; emphasis will be placed on the application of sociological theory and research in the field of aging. 3 credit hours.

SO 337 Human Sexuality
Prerequisite: SO 113 or consent of instructor. A scientific study of human sexual behavioral patterns, social class attitudes, and cultural myths. Topics include reproductive systems, sexual attitudes and behavioral patterns, abortion and sexual laws, and variations in sexual functioning. 3 credit hours.

SO 340 Medical Sociology
Prerequisite: SO 113 or consent of instructor. An analysis of a major social institution, the health care field. Emphasis placed on socio-cultural aspects of the field; general overview of the organization and delivery of health care services and current problems and issues. 3 credit hours.

SO 350 Social Survey Research
Prerequisite: P 301 or M 228. Introduction to the logic of social science by a survey research project. Emphasis on the use of computer software in analyzing large data sets. Topics include theory development, survey design, sampling, methods of data collection, and statistical analysis of social science data. This course is part of the technology component of the university core curriculum. 3 credit hours.

SO 390 Sociology of Organizations
Prerequisite: SO 113 or consent of instructor. Classic sociological theories of organization with emphasis on the concepts of bureaucracy, scientific management, human relations, and decision theory. The relevance of these ideas to concrete organization contexts; e.g., civil service, business, social movements and political parties, charitable institutions, hospitals. 3 credit hours.

SO 400 Minority Group Relations
Prerequisite: SO 113 or consent of instructor. An interdisciplinary analysis of minority groups with particular attention paid to those regional, religious, and racial factors that influence interaction. Designed to promote an understanding of subgroup culture. 3 credit hours.

SO 413 Social Theory
Prerequisites: nine semester hours in sociology. An analysis of the development of sociology in the nineteenth and twentieth centuries with particular emphasis on the theories of Comte, Durkheim, Simmel, Weber, Marx, deToc- queville, and others. 3 credit hours.

SO 418 Public Opinion and Social Pressure
Prerequisites: SO 113, P 111. An intensive analysis of the nature and development of public opinion with particular consideration of the roles, both actual and potential, of communication and influence. 3 credit hours.

SO 440 Undergraduate Seminar
Prerequisite: consent of department chair. A detailed examination of selected topics in the field of sociology and a critical analysis of pertinent theories with emphasis on modern social thought. 3 credit hours.

SO 441 Sociology of Death and Suicide
Prerequisite: SO 113 or consent of instructor. A confrontation with individual mortality and an academic investigation of such phenomena as funerals, terminal illness, and crisis intervention, among many others. 3 credit hours.

SO 450 Research Seminar
Prerequisite: P 301 or M 228. The student develops and carries out an original research project in social science, reporting this procedure to the class. 3 credit hours.

SO 451-455 Special Topics in Sociology, Social Services, Anthropology
Prerequisites: SO 113, SO 221, or permission of instructor. Special topics in sociology, anthropology, or social welfare on a variety of current problems and specialized areas not available in the regular curriculum. 3 credit hours.

SO 501-502 Practicum I and II
Prerequisite: consent of department chair. Field experience in sociology or anthropology. Seminars in conjunction with this experience before off-campus field work is undertaken. Contact during the field work experience and guidance by the mentor provide an opportunity for understanding group and individual dynamics and their repercussions. Follow-up seminars and a paper are required. 1-6 credit hours.

SO 599 Independent Study
Prerequisites: consent of instructor and department chair. Opportunity for the student, under the direction of a faculty member, to explore an area of personal interest. This course must be initiated by the student. 1-3 credit hours.

SPANISH

SP 101-102 Elementary Spanish I and II
Focuses on the fundamental principles of grammar. Extensive vocabulary and pronunciation exercises. In SP 102 aural comprehension and pronunciation are tested by oral examination. 3 credit hours per term.

SP 201-202 Intermediate Spanish I and II
Prerequisites: SP 101-102 or equivalent. Stresses the reading comprehension of modern prose texts and a review of grammar necessary for this reading. Students are encouraged to read in their own areas of interest. 3 credit hours per term.

SOCIAL WELFARE

SW 220 Introduction to Social Services
Course explores two basic questions from a historical perspective: Why are people poor, and how have societies responded to the conditions of poverty? Focus on how the different economic, political, psychological, and sociological arrangements of society and its social institutions create conditions which stimulate and necessitate differing social welfare responses. 3 credit hours.

SW 340 Group Dynamics
Prerequisite: consent of instructor. Designed for students who seek to develop their leadership skills in working with groups of various types. Explores cognitive and behavioral mastery of a range of complex variables for role effectiveness, including a working knowledge of personal, group, and organizational dynamics; professional skills of facilitation; and values of one's professional identity. 3 credit hours.

SW 401-402 Field Instruction I and II
Supervised experience relevant to specific aspects of social services in human service agencies, institutions, and organizations at the local, state, and federal levels. Seminars to assist students with the integration of theoretical knowledge and field techniques through lectures and class presentations. Students are required to spend eight hours a week in the field. 3 credit hours each term.

SW 415-416 Methods of Intervention I and II
Basic social work theory in conjunction with practice of skills to help students begin to develop professional techniques for intervention at both the macro and micro levels of practice. 3 credit hours each term.

SW 599 Independent Study
Prerequisite: consent of the instructor. Designed to permit students to pursue specific areas of interest which may not be available in the regular curriculum. 1-3 credit hours.

THEATRE ARTS

T 131 Introduction to the Theatre
Play analysis from a literary standpoint and as it relates to special problems of the actor, director, designers, and backstage personnel. Practical work in all phases within the classroom. Fall semester. 3 credit hours.

T 132 Theatrical Style
Study of dramatic genres and theatrical conventions through script and critical reading, as well as practical work in class. Spring semester. 3 credit hours.

T 241 Early World Drama and Theatre
Dramatic literature in theatrical contexts from Classical Greece through Restoration England. 3 credit hours.

T 242 Modern World Drama and Theatre
Dramatic literature in theatrical contexts from Realism through the nineteenth century to the present. Includes ethnic drama. 3 credit hours.

T 341 Acting
Developing of acting skills for the stage through games, improvisation, and scene study. 3 credit hours.

T 342 Play Directing
Prerequisite: consent of instructor. Fundamentals of directing, staging techniques, working with actors, and direction of a one-act play for workshop presentation. 3 credit hours.

T 491-492 Production Practicum I and II
Prerequisite: consent of instructor. Practicum in various areas of theatre: acting, directing, administration, technical theatre, and design. Will be directly related to departmental productions. 3 credit hours each.

T 599 Independent Study
Opportunity for the student under the direction of a faculty member to explore an area of interest. This course must be initiated by the student. 3 credit hours.

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UNDERGRADUATE ACADEMIC CALENDAR 2006 – 2007

FALL SEMESTER 2006

August	Tuition and residence charges due	**Tuesday, Aug. 1**
	Residence halls open for new students at 10 a.m.	**Sunday, Aug. 27**
	Orientation	**Sunday-Tuesday, Aug. 27-29**
	Residence halls open for returning students	**Monday, Aug. 28**
	Classes begin	**Wednesday, Aug. 30**
September	Labor Day–no classes	**Monday, Sept. 4**
	Last day to submit an ADD card	**Wednesday, Sept. 13**
October	Last day to petition for January graduation	**Friday, Oct. 13**
	Last day to drop a course	**Friday, Oct. 13**
November	Residence halls close at 10 a.m.	**Wednesday, Nov. 22**
	Thanksgiving Weekend–no classes	**Wednesday-Saturday, Nov. 22-25**
December	Classes end	**Monday, Dec. 11**
	Reading days	**Tuesday-Wednesday, Dec. 12-13**
	Evening exams begin	**Wednesday, Dec. 13**
	Day exam period	**Thursday-Tuesday, Dec. 14-19**
	Last day of the semester	**Tuesday, Dec. 19**
	Residence halls close at 10 a.m.	**Wednesday, Dec. 20**
January	Commencement, 2 p.m.	**Saturday, Jan. 13, 2007**

INTERSESSION 2007

January	Classes begin	**Tuesday, Jan. 2**
	Martin Luther King Day–no classes	**Monday, Jan. 15**
	Classes end	**Tuesday, Jan. 23**

SPRING SEMESTER 2007

January	Tuition and residence charges due	**Tuesday, Jan. 2**
	Residence halls open for new students	**Tuesday, Jan. 23**
	Orientation	**Wednesday, Jan. 24**
	Residence halls open for returning students	**Wednesday, Jan. 24**
	Classes begin	**Thursday, Jan. 25**
February	Last day to submit an ADD card	**Friday, Feb. 9**
	Presidents' Day–no classes	**Monday, Feb. 19**
March	Last day to petition for May graduation	**Thursday, Mar. 1**
	Last day to drop a course	**Friday, Mar. 9**
	Residence halls close at 5:30 p.m.	**Friday, Mar. 9**
	Spring Recess–no classes	**Monday-Saturday, Mar. 12-17**
	Classes resume	**Monday, Mar. 19**
April	No classes	**Thursday, Friday, Apr. 5, 6**
May	Classes end	**Monday, May 14**
	Reading days	**Tuesday-Wednesday, May, 15-16**
	Evening exams begin	**Wednesday, May 16**
	Day exam period	**Thursday-Tuesday, May 17-22**
	Last day of the semester	**Tuesday, May 22**
	Residence halls close at 10 a.m.	**Wednesday, May 23**
	Commencement, 10 a.m.	**Saturday, May 26**

SUMMER SESSIONS 2007

May	First Summer Session classes begin	**Wednesday, May 23**
	Memorial Day–no classes	**Monday, May 28**
June	Last day to petition for August awarding of degrees	**Friday, June 15**
	First Summer Session ends	**Friday, June 29**
July	Independence Day–no classes	**Wednesday, July 4**
	Second Summer Session classes begin	**Thursday, July 5**
August	Second Summer Session ends	**Monday, Aug. 13**

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University of New Haven

BLDG	NAME & DEPARTMENT
1	*Maxcy Hall* - President's Office, Administrative Offices, Bursar's Office, College of Arts and Sciences, School of Business, Career Services Ctr
2	*Bayer Hall* - Undergraduate Admissions, Financial Aid
3	*Gate House* - Graduate Admissions, Graduate International Admissions
4	*South Campus Hall* - Graduate & Undergraduate Registrar's Office, School of Public Safety & Professional Studies
5	*Harugari Hall* - Classrooms -South Campus
6	*M.K. Peterson Library*
7	*Campus Bookstore, Campus Police*
8	*Bartels Hall* - Student Center, Dining Hall
9	*Buckman Hall* - Tagliatela School of Engineering
10	*Dodds Hall* - Dodds Theater, Classrooms, Henry C. Lee Institute of Forensic Science
11	*Kaplan Hall* - Evening Studies, Classrooms
12	*Echlin Hall* - Information Services, ID Card Office, Executive MBA, Fire Science, Computer Labs
13	*New Hall* - Purchasing, Business Office, Alumni Relations and University Advancement, Residence Hall, Dining Hall
14	*Subway Bldg* - University Marketing and Publications, Public Affairs
15	*Dental Hygiene*
16	*Human Resources*

BLDG	NAME & DEPARTMENT
17	*Athletics Offices* -North Campus
18	*Charger Gymnasium* -North Campus
19	*Psychology Bldg*
20	*Sheffield Hall* - Health Services, Disability Services & Resources, Council Center, Residence Hall
21	*Bixler Hall* - Office of Residential Life, Residence Hall
22	*Bethel Hall* - Freshmen Residence Hall
23	*Botwinik Hall* - Residence Hall
24	*Dunham Hall* - Residence Hall
25	*Winchester Hall* - Residence Hall
26	*Ruden Street Apt. #1, #2, #3* - Residence Apartments

BLDG	NAME & DEPARTMENT
27	*Simon Place Apt. #1, #2, #3*, Residence Apartments
28	*15 Ruden Place* - Residence Apartments
29	*Recreation Center* - Future Site - Opening Fall 2007
30	*Arbeiter Maenner Chor* - German Club
31	*Facilities*

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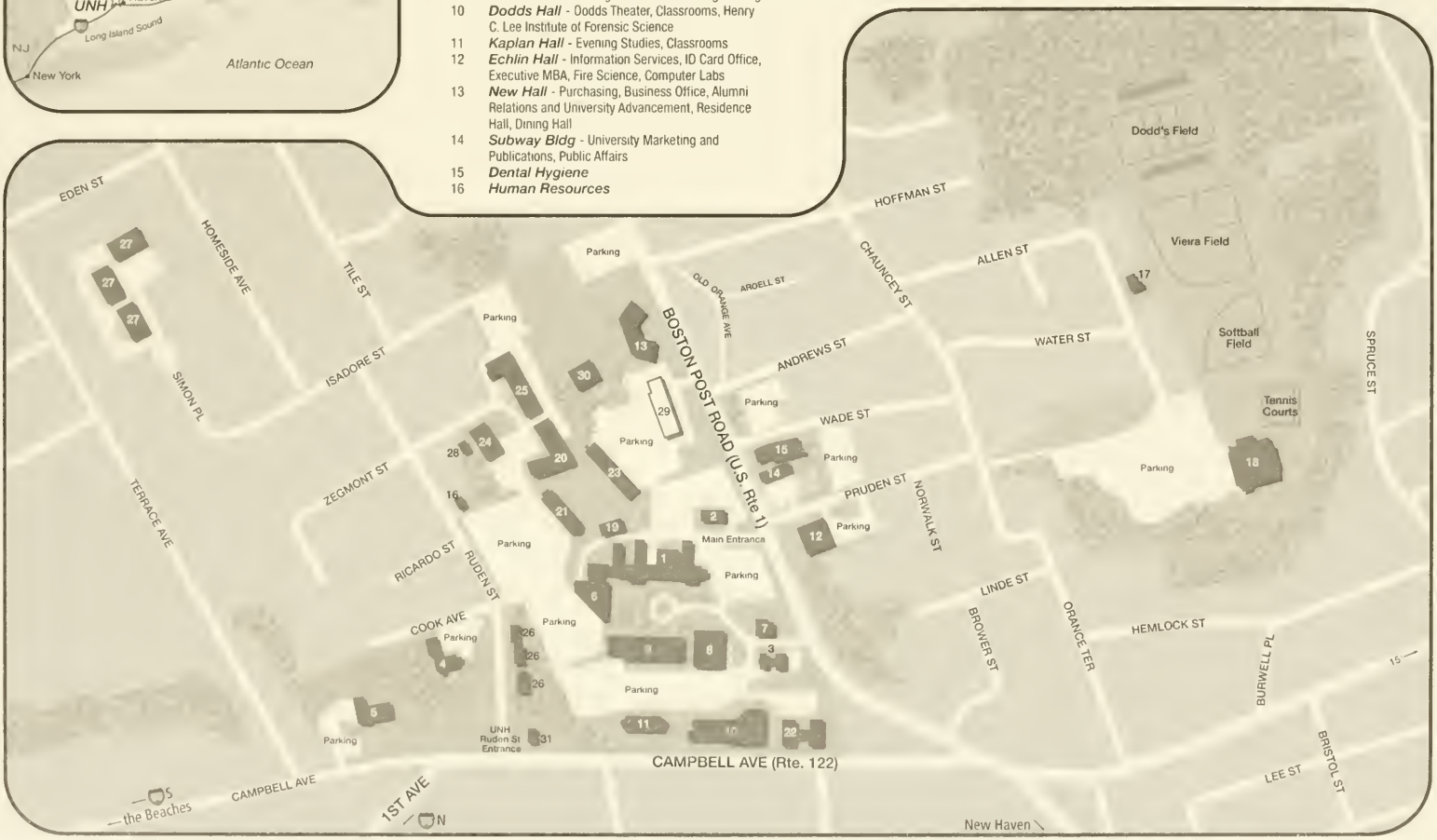
0 — 500 feet
NORTH



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